

The Development of Agriculture and the Diffusion of Agricultural
Innovation in Northumberland 1750-1850

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ABBREVIATIONS

A.A.	...	...	...	Annals of Agriculture
AC	...	...	...	Duke of Northumberland's Archives at Alnwick Castle
Ag.H.R.	.	...	...	Agricultural History Review
A.H.	...	...	...	Agricultural History
A.M.	...	...	...	Agricultural Magazine
Arch. Ael.	...	...	...	Archaeologia Aeliana
BCA	...	...	...	Berwick Corporation Archives
BM	...	...	...	British Museum
D ..	...	...	...	Durham County Record Office
Ec.H.R.	.	...	...	Economic History Review
F.M.	...	...	...	Farmer's Magazine
GPL	...	...	...	Gateshead Public Library
J.N.A.S.	...	...	...	Journal of the Northumberland Agricultural Society
J.R.A.S.E.	...	...	...	Journal of the Royal Agricultural Society of England
L. & P.	.	...	...	Literary and Philosophical Society, Newcastle
N.C.		...	...	Newcastle Courant
NCL	...	...	...	Newcastle Central Library
NCRO	...	...	...	Northumberland County Record Office
NUL	...	...	...	Newcastle University Library
P. & D.	..	...	...	Department of Paleography and Diplomatic, University of Durham.
PRO	...	...	...	Public Record Office
PRO(A)	..	...	...	Public Record Office, Ashridge Branch
Bailey and Culley..				John Bailey and George Culley, General View of the Agriculture of the County of Northumberland, 1794 and later editions.
Thomas Colbeck	...			Thomas Colbeck, 'On the Agriculture of Northumberland', J.R.A.S.E., 8, 1847, pp.422-37.
John Grey	...	...		John Grey, 'A View of the Past and Present State of Agriculture in Northumberland, J.R.A.S.E., 2, 1841, pp.151-92.

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A. The Study

I

PREFACE

The subject of this study is not quite as disjointed as its title suggests. It was thought unrealistic to present an investigation of agricultural change without an accompanying study of the agriculture that was changing. Hence the study is as agricultural as it is geographical or historical and no apology is made for this. It is only regretted that a deeper and more practical understanding of agricultural problems was not available to determine more subtle, though perhaps significant, agricultural change. The author is in no doubt that much of the material, used would have been more ably handled by an agriculturist, as would much else have received more competent treatment from an economist. Yet it is unlikely that either would have embarked on the problem as a whole and investigation has therefore fallen to a discipline of more catholic characteristics.

The study is not primarily concerned with innovation theory. Perhaps the greatest mistake the historian can make - and the historical geographer is as much historian as geographer - is to apply the conditions of the present, its values and way of thinking, to the past. That the 18th century Northumberland farmer knew nothing of innovation theory is not important. One might as well argue that because a 17th century ship's captain knew nothing of mercantilism there was no such thing as a mercantilist system. What is important is that as the captain did not think in terms of mercantilism, neither did the farmer think in terms of innovation and it is unrealistic to make even a tacit assumption that he did. Moreover, data comparable with that from which modern innovation theory is derived is simply not available for 18th century Northumberland and even if it were, it would be a transgression of the rules of historical enquiry to presume blithely that conclusions derived from studies of modern conditions are equally applicable to the past.

Northumberland in the period from 1750 to 1850 was a foreign place whose inhabitants were motivated by values and inclinations very different from our own. For a Duke of Northumberland to control the votes of his tenants and to evict those who voted the wrong way was quite proper in the opinion of both landlord and tenant. The whole community at Seaton Delaval enjoyed the annual entertainment in which children raced to see who could bite the heads from the greatest number of captive sparrows. It is unreasonable to assume that these people saw change in exactly the same light as people today. As man modifies the conditions in which he lives, so he is, at least in part, conditioned by his surroundings. As he modifies his surroundings, so the changed surroundings change him. There are no immutable constants and it is folly to imagine history as a pageant in which Everyman simply alters scene and costume in his movement through time.

Consequently, agricultural change in Northumberland in the period from 1750 to 1850 has been considered, inasmuch as it is possible, from the point of view of contemporaries. Hence the concern with prevailing agricultural conditions, economic constraints and incentives, and with general historical circumstances, not to produce a study that is less geographical, but one that is realistic and accurate, but still geographical.

II

INTRODUCTION

In the days when Farmer George was King and agriculture was a socially acceptable interest, Norfolk more than any other area in the Kingdom maintained and increased its reputation as a leader in agricultural improvement. In the early 19th century, other counties, East Lothian and Northumberland for example, also came to be recognised as agricultural leaders, but never in quite the same way that Norfolk had been. In 1820, death claimed both the blind Arthur Young and the mad King,¹ in the following year the decaying Board of Agriculture finally collapsed and the Corn Law of 1815 meant it was no longer easy for public men to assume a non-partisan enthusiasm for agriculture. Norfolk had attained pre-eminence as an agricultural 'holy land' at a time when such crusades had been fashionable. The later pre-eminence of Northumberland was no less impressive, but its appreciation was limited to those who actively participated in farming.

In the same way that devout historians have seen the rise of Norfolk agriculture as something akin to plants flowering in the desert,² so men tended to look on the development of Northumberland agriculture as a miracle brought about in a wilderness. While progress from moderately good to better agriculture was always commendable, change from abysmal to excellent agriculture was much more impressive. West Norfolk was reputed to have been an area where no wheat had been grown before the days of Thomas Coke of Holkham and where two rabbits had formerly fought

1 Vide F.M., 21, 1820, pp.480-1.

2 Ernle, English Farming Past and Present, 1932, pp.173-4; Spencer, 'On the Improvements which have taken place in West Norfolk', J.R.A.S.E., 3, 1842, pp.1-9; A.M.W. Stirling, Coke of Norfolk and his Friends, 1912; Nancy Riches, The Agricultural Revolution in Norfolk, 1937.

over a single blade of grass.³ So too has Northumberland been seen as a land ruled by agricultural barbarians before an agricultural revolution by good farmers toppled them from power. The Northumbrians of the 19th century took a perverse pleasure in the more primitive characteristics of their ancestors. They revelled in recounting the chaos of Border wars and incursions by moss-troopers. Tales were told of silver spurs served for dinner to indicate that the larder was bare and that it was time to reive again, and the family motto of the Cranstouns - 'Thou shalt want ere I want'⁴ - was sported with not a little pride. "So long as the disturbed and unsettled times continued", it was said, "agricultural improvement was not to be expected",⁵ and a modern scholar has asserted that "The continued state of enmity with Scotland certainly impeded agricultural change for several centuries".⁶

.It is difficult to tell how long this disruption was meant to have prevented agricultural progress in Northumberland. Certainly the Union of the Crowns in 1603 seems to have brought little practical improvement, and even the Act of Union in 1707 apparently did not bring peace and agricultural prosperity to the Borders. Agricultural progress in Berwickshire, supposedly hindered for centuries by the same factors, was said not to have made significant strides until 1750,⁷ and in Northumberland, John Grey claimed that the King's writ did not run throughout the County until 1760.⁸ Legends persist that in the mid-18th

3 Vide G.E.Fussell, '"Norfolk Improvers": Their Farms and Methods', *Norfolk Archaeology*, 33, 3, 1964, pp.332-44; G.E. Mingay, 'The "Agricultural Revolution" in English History: A Reconsideration', *Ag.H.R.*, 11, 1963, pp.123-33.

4 S.Donkin, *The Agricultural Labourers of Northumberland*, 1869, p.6.

5 Seymour Bell's Notes, c.1860; NCRO/ZHE/34/1.

6 R.A.Butlin, *The Evolution of the Agrarian Landscape in Northumberland, 1500-1900*, M.A. Thesis, Liverpool, 1961, p.89. See also G.Tate, *History of Alnwick*, 1866, 1, p.358; John Hodgson, *History of Northumberland*, 1827, pt.2, 1, p.85; Sir John Sinclair, *Old Statistical Account of Scotland*, 1795, 14, pp.9-10.

7 F.M., 10, 1809, p.528.

8 John Grey, p.152.

century Glendale was covered in gorse and broom,⁹ and one tiresome tale in particular of a mare being lost in the Milfield broom in the 1760s and not being found again until it had produced a foal.¹⁰ By the 1760s, the Glendale area was attractive enough to draw farmers with capital such as the Culleys and it could produce wheat yields of 24 bushels per acre, barley yields of 28 bushels per acre and oats at about 40 bushels per acre.¹¹ When Defoe visited the County in 1768, he remarked on the spirit of improvement which had taken hold of at least the northern part.¹² Consequently, in the mid-18th century, Glendale at least could not have been the agricultural wilderness it has frequently been made out to have been. As it has been shown that the agriculture of west Norfolk made considerable progress long before Thomas Coke,¹³ so Northumberland can be seen to have made great advances in the 17th and early 18th centuries¹⁴ and to have been the scene of agricultural change severe enough to have radically altered population distribution over a much longer period.¹⁵ It would be naive to accept the numerous assertions of agricultural stagnation before 1750, but equally naive to attempt a study of agricultural development before this time in the hope of discovering information enough to trace change in any detail. The period after 1750 has been

9 Josephine Butler, *Memoir of John Grey of Dilston*, 1869, pp.39-40.

10 John Grey, p.152

11 Arthur Young, *Northern Tour*, 1770, 3, p.76.

12 Daniel Defoe, *A Tour Through Great Britain*, 1769, 3, pp.253-4.

13 R.A.C. Parker, 'Coke of Norfolk and the Agricultural Revolution', *Ec.H.R.*, 2nd series, 8, 1955, pp.156-66.

14 Vide Paul Brassley, *The Agricultural Economy of Northumberland and Durham in the period 1640-1750*, B.Litt. Thesis, Oxford University, 1974.

15 Vide Stuart Wrathmell, 'The Desertion and Shrinkage of Medieval Villages in Southern Northumberland', Ph.D. Thesis, University of Wales, Cardiff, 1974; Michael Jarrett, 'The Deserted Village of West Whelpington, Northumberland', *Arch. Ael.*, 4th series, 48, 1970, pp.183-302.

selected not because more change necessarily took place after this date, but because previous periods are not sufficiently well-documented to support a detailed study of agricultural change.

Tantalizing snatches of evidence suggested that marked progress was taking place in Northumberland agriculture after 1750. A Report to the Greenwich Hospital Commissioners in 1805 remarked that "an uncommon spirit of agriculture has arisen in the North, which is diffusing itself with great rapidity....",¹⁶ and a traveller through the region in 1804 "found nearly realized, what I conceived existed only in the imagination of some warm and zealous advocates, viz. a perfect system of rural management".¹⁷ An increasing number of references was made to the growing popularity of a new school of husbandry¹⁸ and William Marshall chose to differentiate between the western side of his Northern Department, where manufacturing held sway, and the eastern, where agriculture was "carried on with a degree of skill and industry, and with a rational, well moderated spirit of improvement that is not equalled in any other department of this kingdom".¹⁹ M^cCulloch in 1837 regarded Northumberland as an ideal by which to measure the improvement in the agriculture of other counties,²⁰ and Whellan remarked of Northumberland in 1855 that "The agricultural improvements made in this county of late years are scarcely to be equalled in any other part of England".²¹ Hence, there

16 NCRO/NRO/467/42/2/175.

17 F.M., 5, 1804, p.262.

18 e.g. Ovington Farm was described in the early 19th century as "Managed according to the Rules of the new School of Husbandry". William Todd to John Tweedy, 1806 or 1807, NCRO/ZCO/9/1.

19 William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 1808-18, 1, p.xxxiv.

20 J.R.M^cCulloch, Statistical Account of the British Empire, 1837, 1, p.176.

21 W. Whellan, History, Directory and Topography of Northumberland, 1855, p.113.

were grounds for supposing that agricultural change of some moment was taking place in Northumberland during these years.

There is also reason to suppose that this remarkable agricultural development was not shared even by areas contiguous to Northumberland. Cumberland was regarded by all commentators as being well behind Northumberland in every branch of agriculture;²² according to one opinion in 1805, a full century behind.²³ Of the backward state of agriculture in Cumberland it was said in 1800 that "the greatest bar in the way of improvement, is, the unconquerable prejudice of the farmers in favour of old-established systems, and their aversion to experiments and to the calculation of the advantages of different modes of management".²⁴ Other neighbouring areas were unfavourably compared with Northumberland: the East Riding of Yorkshire in 1836,²⁵ the whole county of Yorkshire in 1837²⁶ and even East Lothian in 1808.²⁷ But perhaps the greatest contrast with Northumberland agricultural progress was the primitive condition of Durham agriculture, described in 1856 as not just worse than Northumberland farming, but worse than that of any other part of the kingdom.²⁸ Hence there were grounds for examining the developments of Northumberland agriculture in a degree of isolation from those occurring elsewhere in the country and even from events in neighbouring regions.

22 e.g. J.R.M^cCulloch, op.cit., p.173.

23 F.M., 4, 1805, p.45.

24 John Housman, A Topographical Description of Cumberland, Westmorland, Lancashire and a part of the West Riding of Yorkshire, 1800, p.65.

25 Evidence of Charles Howard, Report of House of Commons Committee on Agricultural Distress, 1836, p.172.

26 J.R.M^cCulloch, op.cit., p.176.

27 F.M., 9, 1808, p.361.

28 Thomas Bell, 'A report upon the Agriculture of the County of Durham', J.R.A.S.E., 17, 1856, pp.118-9.

It would be mistaken to imagine that all parts of Northumberland experienced equally rapid agricultural development. While Seymour Bell could claim in the middle of the 19th century that "the farming of Northumberland is not surpassed in the world for enterprise, skill and success", he also admitted it had "some of the worst, as well as the best examples of farming".²⁹ Perhaps the least enterprising and most primitive agriculture in the County was practised in the south-west,³⁰ a region partaking of the agricultural characteristics of Cumberland and Durham rather than of Northumberland. Other areas, including Redesdale and the land between Bewick and Alnwick,³¹ and the Lowick-Chatton region,³² were said to have been distinguished more by backwardness than by progress. The pearl of improved Northumberland agriculture seems to have been the north of the County, particularly the Bamburgh, Glendale and Tweedside areas.³³ Other areas were said to have made vast strides, including the Warkworth neighbourhood³⁴ and the Tyne Valley,³⁵ but easily the most conspicuous agricultural contrast in the County was that between north and south.³⁶ As Richard Warner travelled north from Morpeth in 1802, he wrote, "the excellent system of husbandry, which has obtained to its farmers the praise of superior skill in agriculture, refreshed our eyes most agreeably, after the slovenly culture of the coal country

29 Seymour Bell, Notes on Agriculture, c.1860, NCRO/ZHE/34/1b.

30 John Hodgson, History of Northumberland, 1840, pt.2, 3, p.59; W. Whellan, op.cit., p.894.

31 John Wilson, Notes on Northern Farms and Farming, 1864, pp.7 and 14, NCRO/ZSW/Add.& Misc.

32 Philip Pusey, 'On the Agricultural Improvements of Lincolnshire', J.R.A.S.E., 4, 1843, p.289; A.M., 1806. (Letter from 'R' June 4th 1806 and reply from Agricola Northumbriensis).

33 Seymour Bell, Collections Relating to Agriculture, c.1860, NCL/L630; F.M., 1, 1800, pp.34-5; Thomas Colbeck, p.427; John Grey, p.156; Bailey and Culley, 1805, pp.29-30.

34 N.C., May 6th 1775.

35 The Gentleman's Magazine, Jan. 1807, pp.38-9.

36 The Times, Nov.28th 1851.

from which we had passed".³⁷ John Wilson put the situation even more succinctly in 1864 when he remarked that "Of the two great divisions of the county it is generally admitted, I believe, that agriculture has been more advanced, and is in a higher and more improved state in the northern than in the southern - and that the farmers and the farming on the Tweedside are greatly in advance both as regards their skill, capital, and extent of operations of those occupying the Tyneside district of the County".³⁸ Hence there was scope for an examination of the development of agriculture in Northumberland not just on the County scale, but on a more local scale in which there would appear to have been significant variation.

It is the purpose of this study to examine the progress of agricultural development in Northumberland, to look at the several regional variations in that progress, and by so doing to discern what factors prompted particular sorts of agricultural change. The contemporary agricultural world firmly believed that agricultural progress did not just happen but was the product of a complex series of controlling factors, some agricultural, some geographic, some economic and not a few psychological. It was in such terms that the comparative agricultural prosperity of Norfolk³⁹ and of Scotland⁴⁰ was explained by the experts of the day. Northumberland seems to offer both suitable and virgin ground to examine the effect of such factors by tracing in as much detail as possible the diffusion of innovation within a changing agricultural world. The century from 1750 to 1850 has been chosen because it covers the period during which Northumberland was hailed as an agricultural leader, because change over a longer period would necessarily have had to have been studied in less detail, and over a

37 Richard Warner, *A Tour Through the Northern Counties of England*, 1802, 2, p.8.

38 John Wilson, *op.cit.*, p.2.

39 Arthur Young, *A Farmer's Tour*, 1771, 2, p.150.

40 J.R.M^cCulloch, *op.cit.*, pp.481-3.

shorter period would too often have appeared incomplete. Agricultural information for the central, Napoleonic War, period is prolific, but is as scarce for the period before 1750 as it is in some respects overabundant for that after 1850. In a study of change, it is necessary that data from all parts of the period under consideration be comparable; a longer time span would have made this impossible. For purely practical reasons, a time period is necessary, but there is no suggestion that agricultural change in Northumberland started in 1750 and stopped in 1850, despite the assertions of past scholars. When it was suggested in 1846 that as much as possible had been achieved in Northumberland agriculture, John Grey sharply reminded the audience that perfection "will certainly not be attained in our time".⁴¹ It is the purpose of this study to examine what had been attained and the way in which it had come about.

⁴¹ Cuthbert Johnson, *Modern Agricultural Improvements*, 1847, p.7.

III

SOURCES

The solution to a problem is derived from the information available concerning it. When the problem is historical, information may be unreliable, patchy or altogether absent and there is little that can be done to augment such evidence. On some matters as much information may have survived as could possibly be desired; on others there may be little or no information. In the second instance, the historian must make the most of what there is: in the first, he must still remember that even the best historical evidence is not proof. The result is likely to be a situation in which examination of some important matters can be frustratingly inconclusive, while some less important points can be studied in great detail. Such uneven treatment is the inevitable consequence of deficiencies in the source material and it is worthwhile considering very briefly what sources were available for this study.

Most prolific of the sources were the estate records. These consisted of estate maps, reports on farms and agricultural policy, accounts, and, easily the most useful, letters between landlords and their agents, which frequently contained references to farming problems and agricultural change. Of all the collections, those of the Swinburnes, Blacketts and Delavals were particularly informative, as were the Tankerville Papers, though these last will be much more so when they have been sorted. In the same way, the estate papers of the Duke of Northumberland, invaluable as they were, will be of still greater use when they are thoroughly listed. The Visitation Reports of the Greenwich Hospital Commissioners were also especially useful.

The greatest gap in the information provided by estate records, namely the lack of detail on the activities and opinions of individual farmers, was partly filled by the survival of the personal papers of George Culley, who farmed in one of the most progressive areas of the

County between 1767 and 1813. From these an idea can be gleaned of how the practical farmer, rather than the agricultural administrator, reacted to change.

Comprehensive views of Northumberland agriculture were provided by visitors to the County such as Arthur Young, William Cobbett, James Caird and John Wilson; by native agricultural experts such as Thomas Colbeck and John Grey, and of course, by the County Agricultural Report to the Board of Agriculture, compiled by John Bailey and George Culley and printed in several editions after 1794. Papers delivered to various local agricultural societies also provided much information about the general state of agriculture in the region.

Comprehensive information of a more statistical nature was largely derived from the various official surveys of the period. The Census Returns, the 1801 Crop Returns, the Land Tax, and the second Agricultural Census, that of 1867, are familiar sources, but some less exploited material was available for Northumberland, such as the Returns of 1795, 1798, 1800, 1803 and particularly the Tithe Files, compiled in the period between 1838 and 1843. Question 11 of this last set of documents, relating to agricultural conditions in each township, proved most illuminating. Also available were crop acreage and yield estimates from the mid-19th century compiled by a local land agent.

General County histories, such as those by M^cKenzie, Wallis and Hodgson and the Northumberland County History, as well as the very many more local studies, yielded information unavailable elsewhere, though these sources had to be handled with a degree of circumspection and discrimination. Local directories were also useful, especially for details about internal boundaries, and the first exhaustive Northumberland directory, that by Parson and White of 1827, is an excellent work.

Extensive use was made of contemporary agricultural and economic texts and of agricultural dictionaries and encyclopaedias, not just to

IV

THE AGRICULTURAL LANDSCAPE

This section seeks to fulfil two functions. It tries to provide a very brief summary of the pertinent physiographical features of the County and to depict its administrative divisions. There is, of course, little geographical reason for choosing a county as an area of study, but there is considerable historical justification. Not only does much historical evidence relate to the county and its various administrative sub-divisions rather than to more natural regions, but men thought of their location in terms of parish, ward and county much more than in terms of physiographic regions. Some contemporaries appreciated the failings of the county unit. William Marshall described its use in 1796 as "an impropriety, not only in theory, but in practice. It destroys that simplicity of execution and perspicuity of arrangement, which alone can render an extensive undertaking pleasurable to him who prosecutes it, or profitable to the public".¹ But Marshall would have been critical of any method adopted by the Board of Agriculture, and above all, Marshall was a contemporary, able to make his own terms, to apply information relevant to whatever conditions he chose to apply. The historian, even the historical geographer, is not in that position. Proper as it might be, he can impose his own framework of reference only at the expense of making scarce information less relevant or of forfeiting it absolutely.

Though a study of the North East would have made more sense geographically, the concept of a 'North East' was unknown before the 19th century and information on that scale is very scarce. In a study of a world in which the term 'country' could be any unit from the surrounds of a village to the whole nation, it is vital to identify

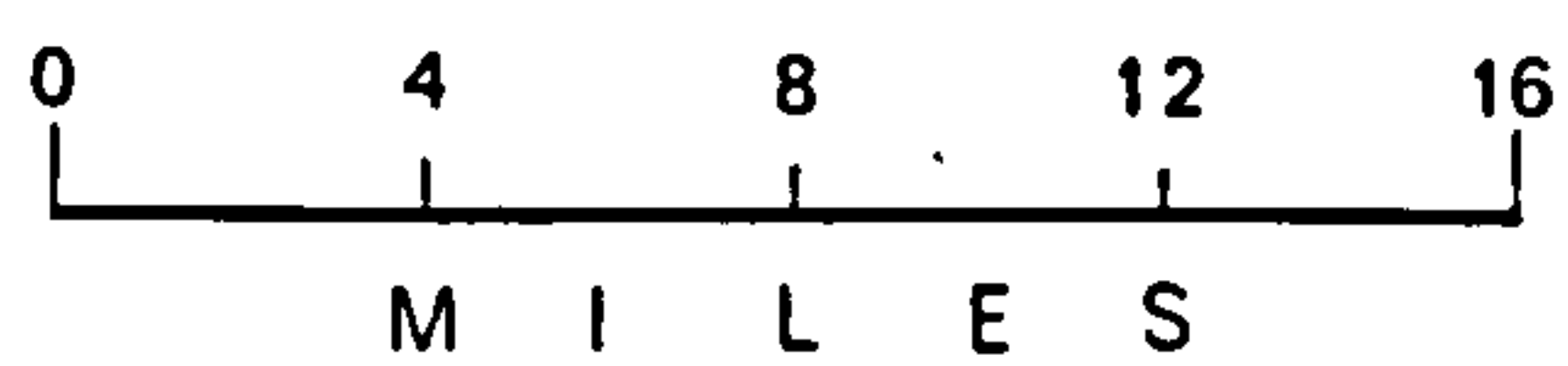
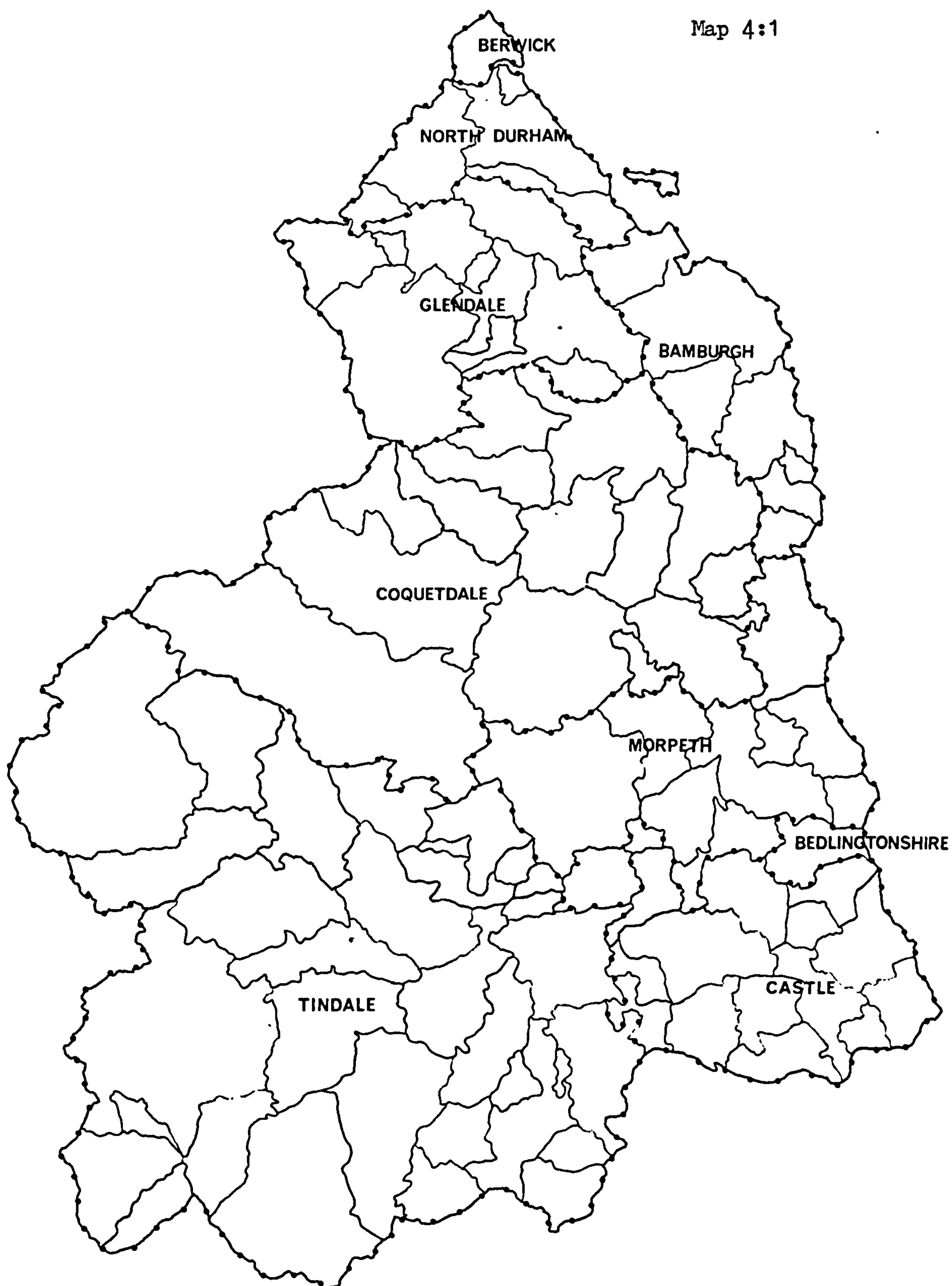
1 William Marshall, Review and Abstract to the County Reports to the Board of Agriculture, 1808-18, 1, Introduction, p.xxvii.

regions to which reference is as specific and precise as possible, and for which most evidence is available. Hence it was necessary to resort to administrative units and the largest of these is the County of Northumberland. Map 4:1 shows the ward divisions of Northumberland, on which scale a considerable proportion of the statistical information was gathered, and also the parts of the present County, North Durham and Bedlingtonshire, which were administratively part of County Durham before 1844. Map 4:2 illustrates the principal parishes. Some boundary changes took place during the period, but more difficult to determine was whether information ostensibly for whole parishes in fact applied to associated parochial chapelries, of which there are many, or whether such information for these was simply missing. To avoid this difficulty and to ensure the greatest possible accuracy, much information was gathered for townships, of which there were well over 600 in the County, and then brought up to basic parish scale. Map 4:3 shows those towns in Northumberland important enough to have been marked on John Bailey's map of 1794.²

Northumberland's relief is shown on Map 4:4 and the principal rivers on Map 4:5. Generally, the land slopes from west to east, with a great proportion of the western part of the County over 1,000 feet above sea level, much of the Scottish and Cumberland border area over 2,000 feet and a peak of 2,676 feet in the Cheviot Hills in the north-west. East of this very high land is a broad tract of moorland generally above 800 feet, succeeded by an equally broad zone lying between about 250 feet and 800 feet above sea level and finally a coastal plain which narrows towards the north. In the far north, the coastal plain broadens again to join the lowland area associated with the Tweed, Breamish and Till Rivers. This northern inland basin is deprived of direct access to

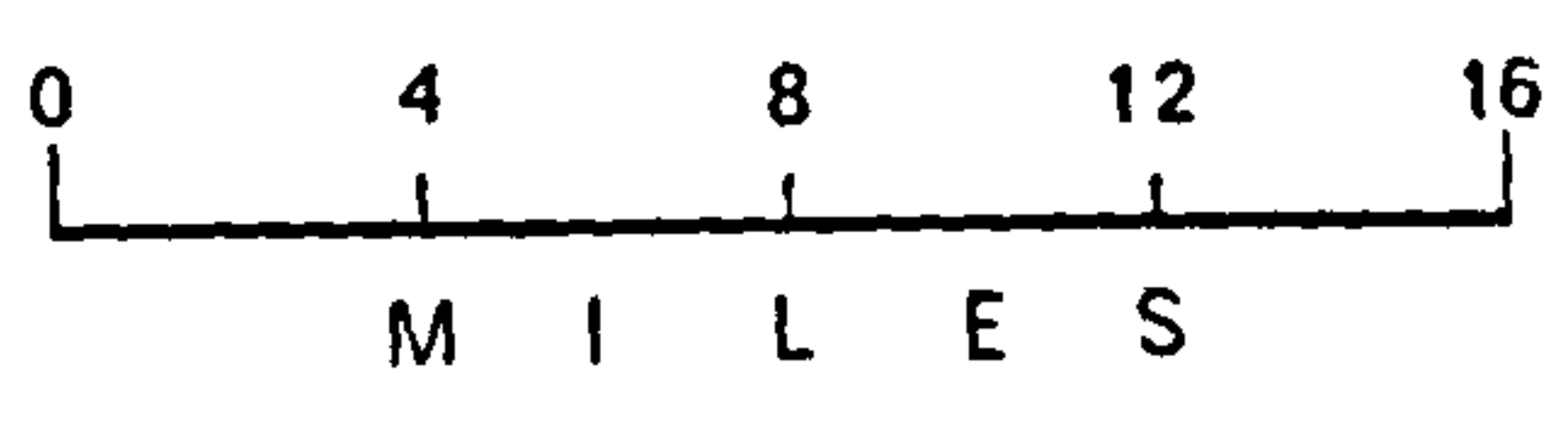
2 Bailey and Culley, 1794.

Map 4:1



Ward Divisions.

Map 4:2



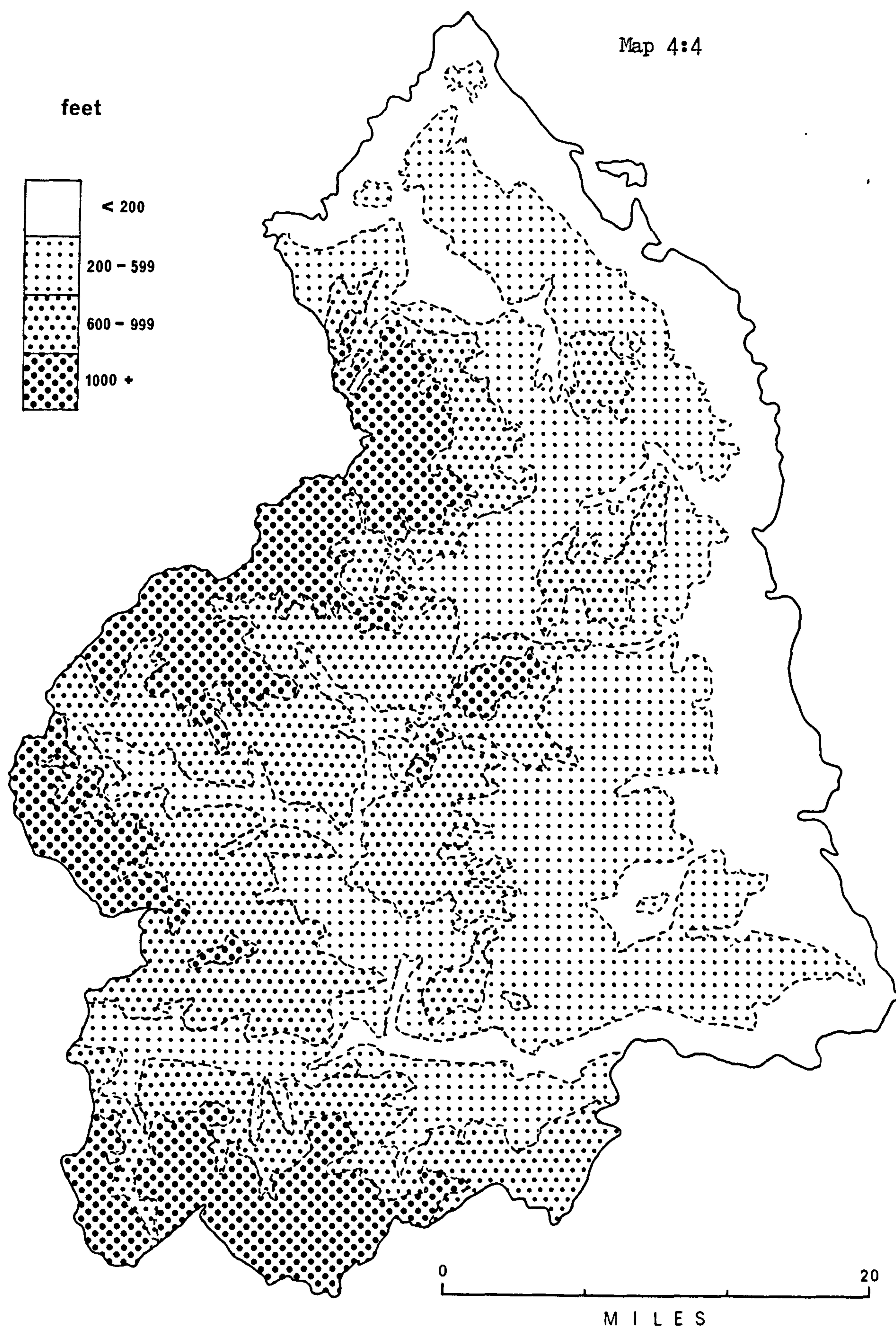
Parishes.

Map 4:3



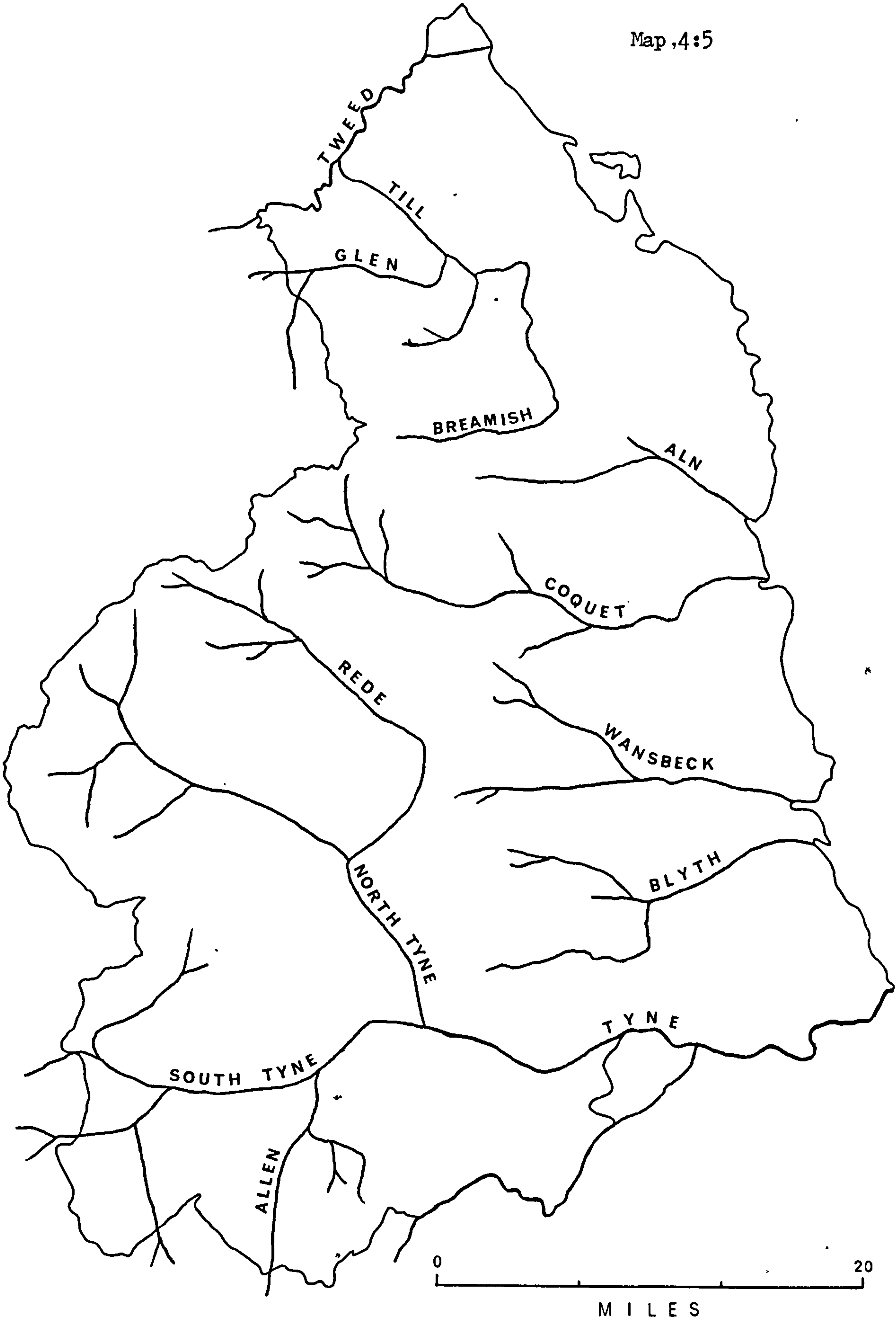
Principal Towns, c.1794.

Settlements shown are those marked on John Bailey's map of 1794 in Bailey and Culley.



Summary of Relief.

Map ,4:5



Principal Rivers.

the sea by a ridge of Fell Sandstone which, at a height of over 500 feet, stretches from Lowick in the north to Rothbury in central Northumberland and is breached only by the Rivers Aln and Coquet. In the south, the River Tyne provides a fertile east-west corridor and the narrower valleys of the North Tyne and Rede make inroads into the moorland to the north-west. The Pennine Plateau at heights of over 2,000 feet intrudes into the very south of the County.

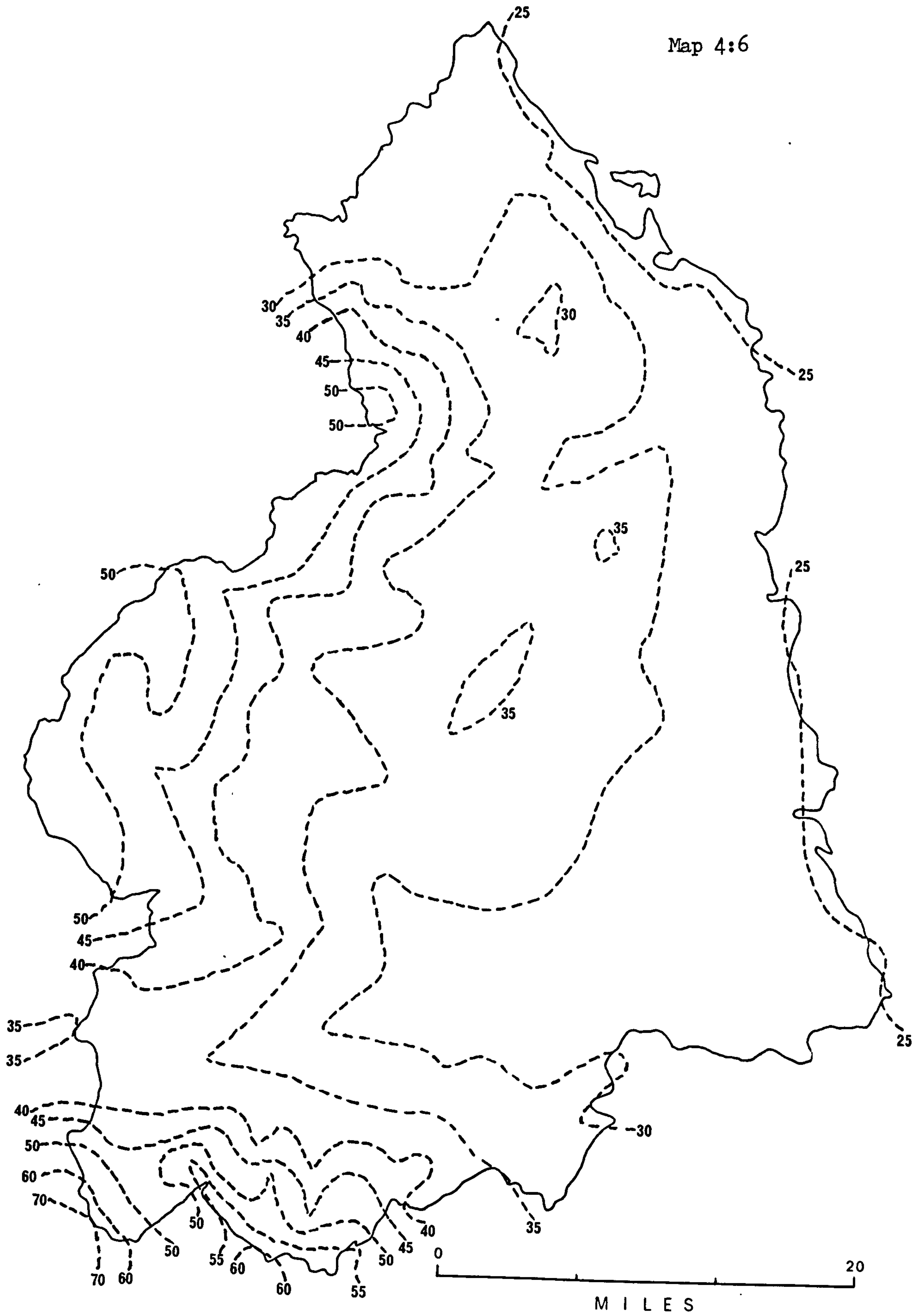
Average annual precipitation is shown on Map 4:6 which again emphasises the east-west ascent of the land, the coastal and northern plains, and the Tyne Gap. Lowest rainfall occurs in the Bamburgh area and the highest over the Cheviots, the western moors and particularly the Pennine area in the far south-west. For most of the County, the average annual rainfall is probably about 30 inches. Evaporation is slow, the atmosphere comparatively moist and prolonged drought is exceptional. Cold winds from the North Sea usually delay the arrival of Spring and are the cause of sea-frets in coastal areas in May and June. Average temperatures and the length of the growing period are both seriously reduced as altitude increases. Some 18.1% of Northumberland is reckoned to lie above 1,000 feet and to suffer severely from the combined disadvantages of low temperatures, short growing seasons and exposure to wind.³ Oats will not ripen above 1,200 feet and the Forestry Commission has established 1,500 feet as the maximum height at which to attempt the growing of trees in the County.⁴

Map 4:7 presents a generalized inventory of the various soil types in Northumberland. Soils in group A, in the north and along the coast, are formed on a reddish-brown glacial drift, with generally lighter,

3 T. Batey, A Reconnaissance Survey of the Land of Northumberland above the 1,000 feet contour, M.Sc. Thesis, Newcastle University, May, 1955.

4 A Physical Land Classification of Northumberland, Durham and a part of the North Riding of Yorkshire, North East Development Association, 1949, p.21.

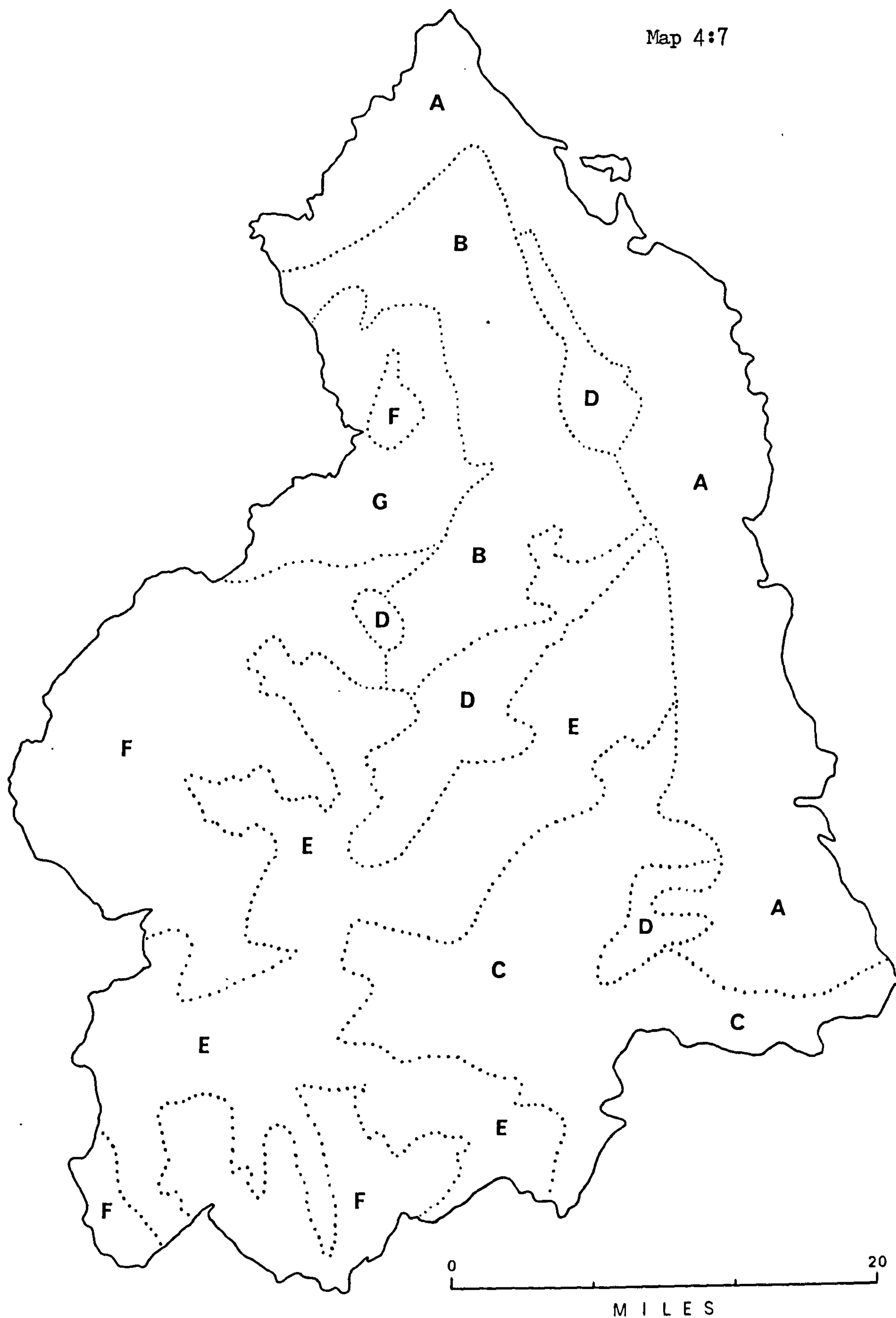
Map 4:6



Annual Precipitation (in inches).

Source: L.Dudley Stamp, The Land of Britain, Part 52, Northumberland, 1946.

Map 4:7



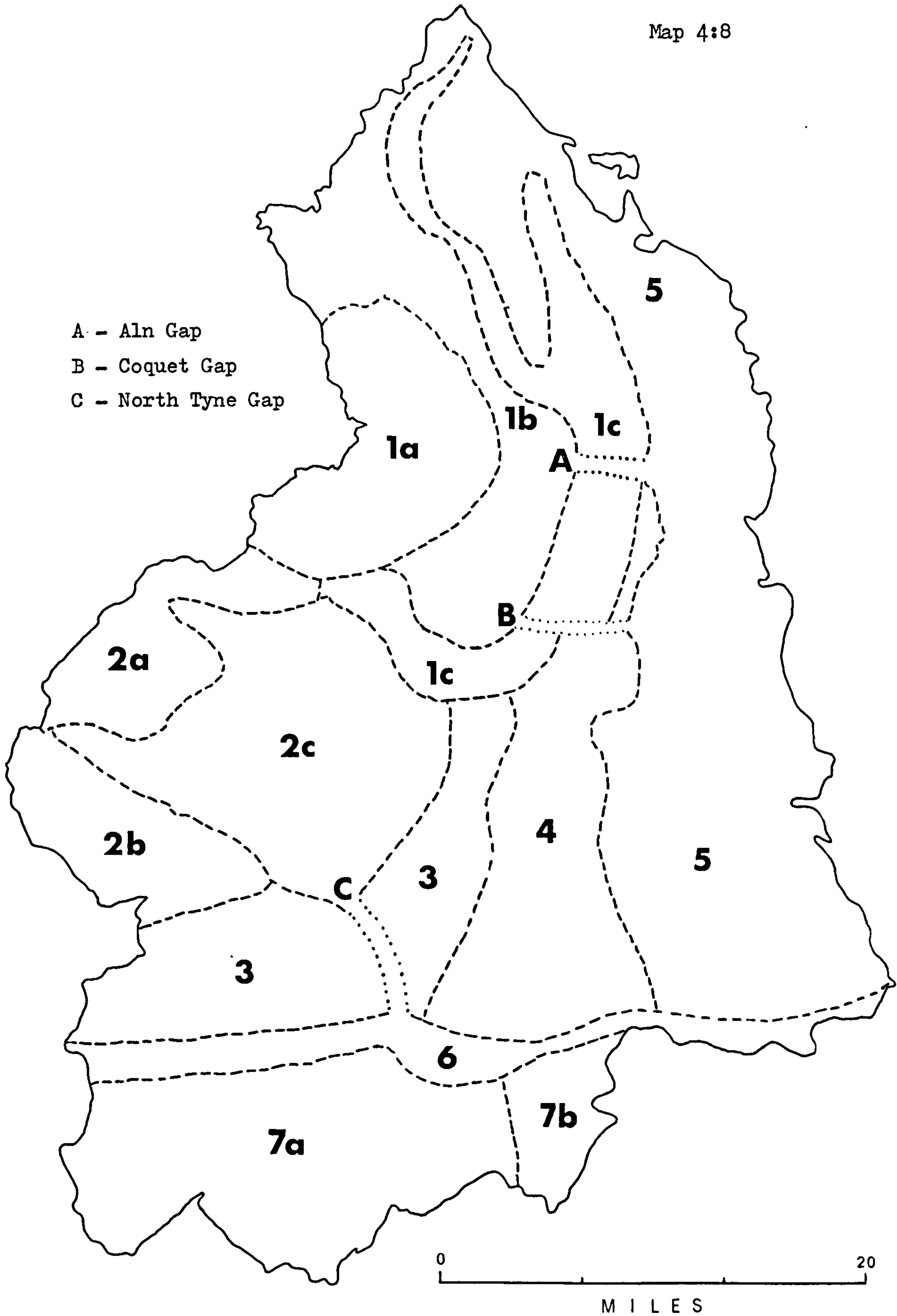
Summary of Soil Types.

Source: H.C.Pawson, A Survey of the Agriculture of Northumberland, 1961.

medium loams in the north and heavier clay loams further south. Soils in the Till Valley are often sandier and to the south as far as Rothbury, that area comprising group B, are brown medium and light loams largely derived from underlying Cementstone. Group C contains much boulder-clay, but with areas of sand, gravel and alluvium in the Tyne Valley. Group D soils are associated with the underlying ridge of Fell Sandstone, which emerges in frequent rock outcrops. Soils here are podsolized, frequently include acid black humus or peat, and often cover a thin layer of cemented iron-pan. The soils of group E are not dissimilar to those in group C to the south-east, but have developed under a higher rainfall regime to form mainly poorly-drained gley or even peat soils with only patches of better medium loams. The highest parts of the County, with the exception of land surrounding the Cheviots, are characterised by soils in group F. Such soils, whether derived from the granite of Cheviot, from Carboniferous material or boulder-clay, have a very acid peaty surface overlying a dull grey leached layer, frequently waterlogged. Soils on the lands immediately peripheral to Cheviot make up group G and have been formed from andesite lava formations. They are sometimes reddish-brown, fertile and friable, but can also be thin and acidic.

Map 4:8 is derived from that compiled by J.W. House showing the physiographic regions of the County. It differentiates the broad rounded hills of Cheviot (1a) from the fertile surrounding vales of the Breamish, Till and upper Aln and Coquet Rivers (1b) and from the steep Fell Sandstone scarps (1c) enclosing them on the east. To the south are the high and isolated moorlands of the Border (2a) and Bewcastle (2b) Fells and the slightly less bleak lands associated with the Rede and North Tyne (2c), the valley of the Rede being characterised by a broad, gently sloping valley as far as Otterburn and that of the North Tyne by meanders, haughs and some narrower sections. To the south and east of the moorland area is one of an east-west alignment of scarps and vales (3) which produce a variety of landforms. To the east is a transitional

Map 4:8



Physiographic Divisions.

After J.W.House, Scientific Survey of North-East England,
British Association, 1949.

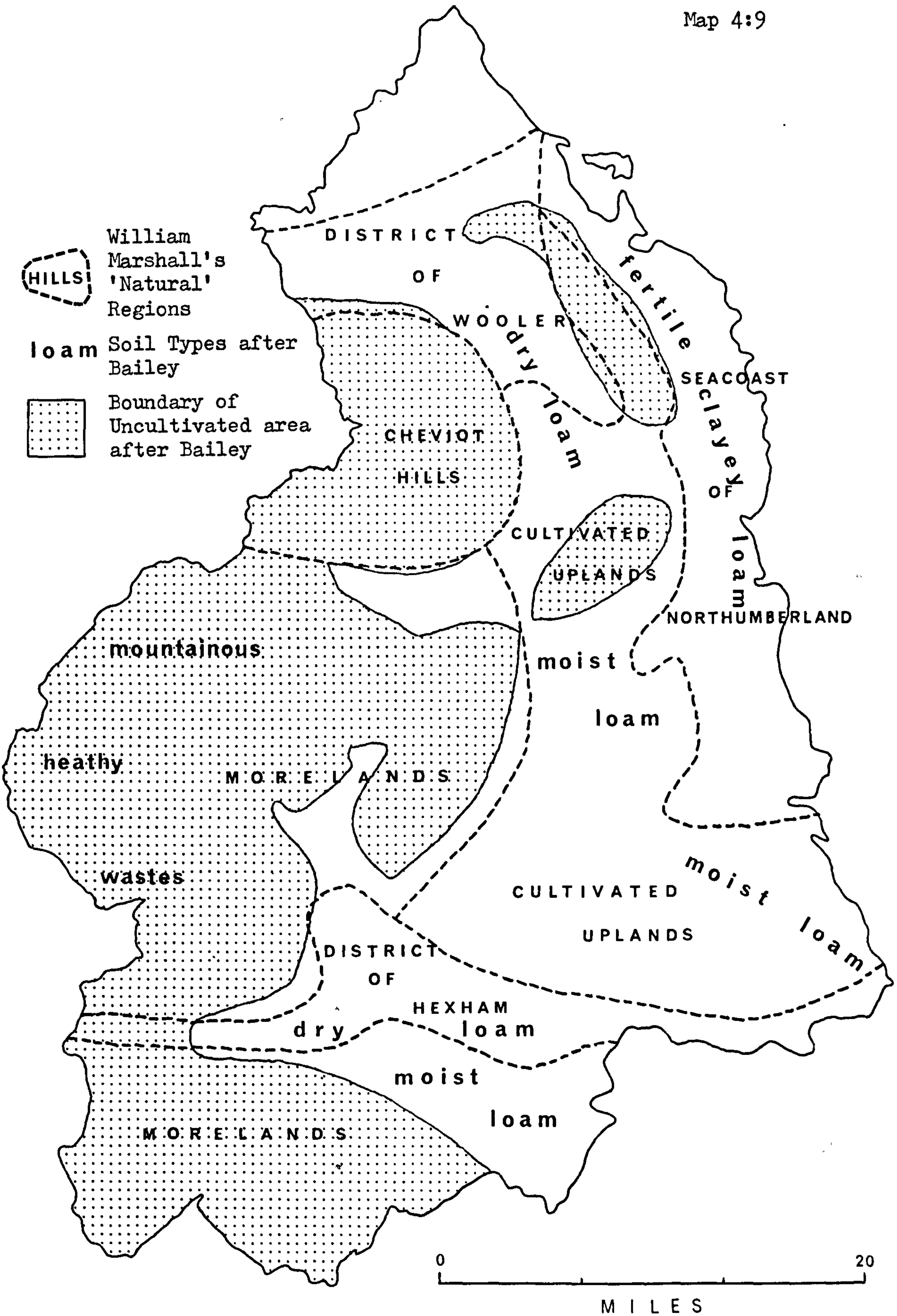
zone (4), basically a low, drift-covered plateau sloping gently eastwards. The coastal belt (5) is broader in the south than in the north and is varied in character, its drift-covered lowlands containing sandstone outcrops, alluvial flats, sand dunes, small bays and rocky headlands. The Tyne Valley (6) provides an easy east-west routeway which greatly widens above Hexham. Land to the south of the Tyne rises much more steeply than that to the north and becomes an area of barren uplands and deep valleys, more rugged in the dale area to the west (7a) than on the sandstone plateau to the east (7b).

Map 4:9 is interesting in that it shows William Marshall's 'Natural Districts of Northumberland'. These seem fairly similar to, if less detailed and accurate than, the physiographic regions defined by House. John Bailey's brief comments on soil type are superimposed and also seem to fit Marshall's pattern. In 1852, Hugh Taylor made an attempt to divide Northumberland into agricultural regions for the purpose of examining wheat yield.⁵ His divisions are shown on Map 4:10 and the comments pertaining to agriculture from Thomas Colbeck's map of 1847⁶ have been added. Again, though Taylor's emphasis was clearly on arable land, there is a basic similarity with other physiographic descriptions. It seems that contemporaries were able to determine fundamental physiographic divisions within the 'unnatural' County unit. In the same way, though this study must depend on traditional administrative regions for the gathering and presentation of available data, this does not prohibit an appreciation, within an administrative framework, of the importance of the real landscape.

5 Hugh Taylor to Newcastle Farmers' Club, March 6th 1852, L. & P., Bolbec, N630.6/2.

6 Thomas Colbeck, 'On the Agriculture of Northumberland', J.R.A.S.E., 8, 1847.

Map 4:9



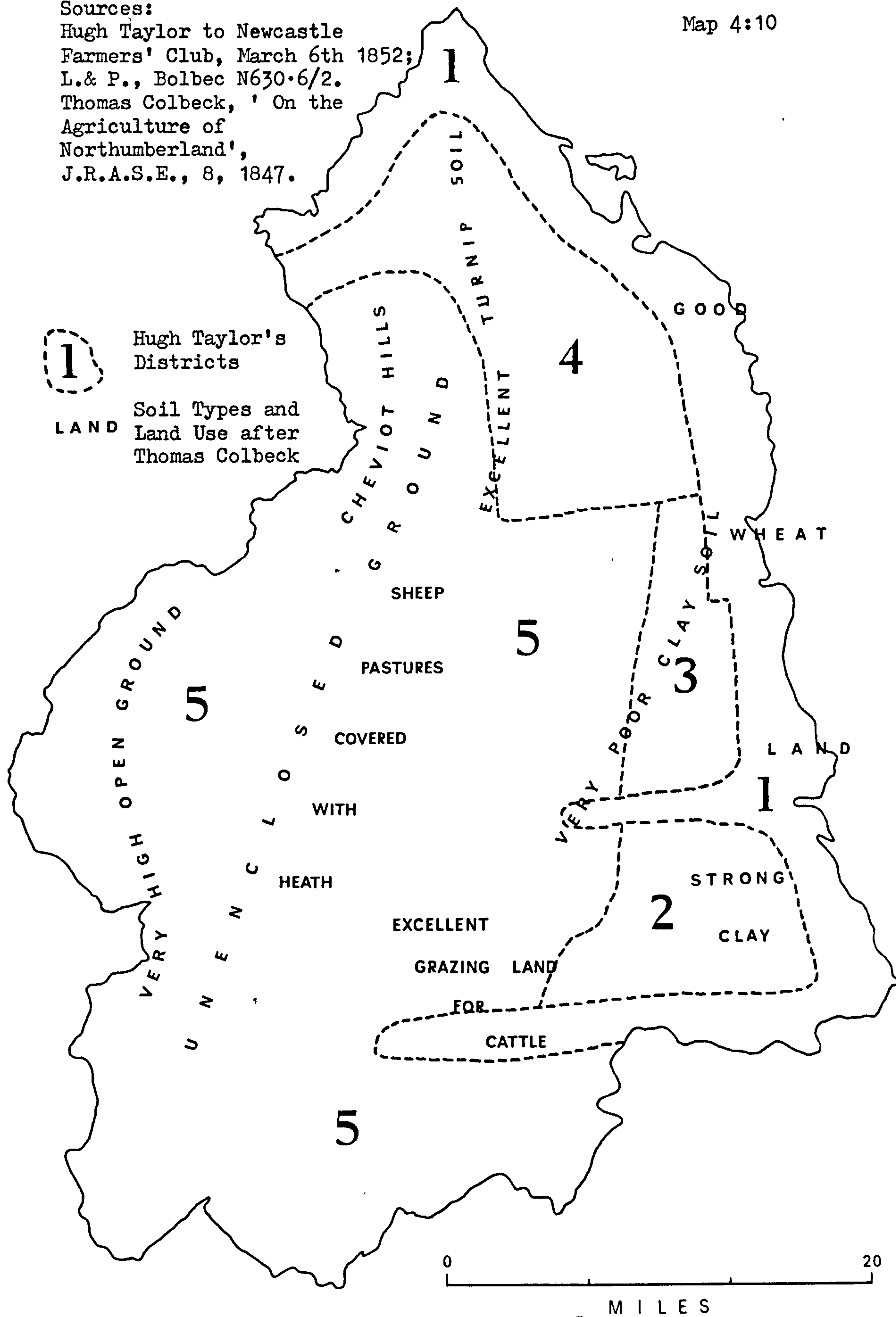
Regions of Northumberland, c.1800.

Sources: Bailey and Culley, 1794.
William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 1808-18.

Sources:

Hugh Taylor to Newcastle
Farmers' Club, March 6th 1852;
L. & P., Bolbec N630.6/2.
Thomas Colbeck, 'On the
Agriculture of
Northumberland',
J.R.A.S.E., 8, 1847.

Map 4:10



Regions of Northumberland, c.1850.

1. Best wheat land.
2. Poor clay soil, but a little of better quality. Some oats.
3. Poor clays. Mainly oats.
4. Light turnip and barley soils.
5. Permanent pasture and wastes with tiny patches of good land.

B. Conditions Influencing Agricultural Development

V

FARM SIZE

If there was any one point on which most of the agricultural theorists of the late 18th and early 19th centuries were agreed, it was on the relationship between large farms and improved agricultural practices. Large farms meant large rents paid by substantial farmers with capital enough to experiment, to take judicious risks and to tide them over periods of low prices and misfortune. Small farms, it was argued, meant just the reverse. Poverty and ignorance were said to have been the ordinary inhabitants of small farms.¹

"On what farms in Norfolk have turnips been cultivated, and used to the greatest advantage? On what farms in the Carse of Gowrie has the cultivation of grain been most successfully carried on? In Leicestershire, where have the greatest improvements in the different breeds of livestock been effected? In the counties of Northumberland and Berwick, where have improved breeds of stock been most generally united with skilful culture? Every person who has travelled through these districts, with a view to procuring agricultural information, must answer, 'on large farms'."²

Arthur Young heartily concurred with the general sentiment and asserted that "we have throughout England no tracts of country (not one to my knowledge) divided generally into small farms, and yet well cultivated".³

It is not altogether obvious what comprised a small farm in this context. Was a unit of 100 acres situated on fertile land near a

1 W.Marshall, 'Rural Economy of Yorkshire', 1788, 1,p.255.

2 James Donaldson, 'Modern Agriculture', 1795, 1, pp.403-4.

3 Arthur Young, 'On the Size of Farms' in 'Georgical Essays', ed. Andrew Hunter, 1803, pp.555-70.

considerable town and paying £200 yearly rent a smaller concern than 1000 acres of moorland paying the same rent? Probably not, and it is clear that acreage can be but the crudest of guides to magnitude of enterprise. Young, in his statistical accounts of specimen farms encountered on his Northern Tour, chose to express farm size in terms of rental and only indirectly in terms of acreage.⁴ Yet he still calculated that the most economic size of farming unit was probably about 300 acres, half arable and half grass.⁵ This was certainly much larger than the average farm size of many parts of England. Mingay has deduced from the Board of Agriculture Reports that farms of under 100 acres predominated in twelve English counties at the end of the 18th century, and were common in at least six others,⁶ and McCulloch reckoned that the average farm size in England in 1831 was between 150 and 160 acres.⁷ The average Northumberland farm was certainly very much larger than this throughout the period 1750-1850.

Figure 5:1 shows average Northumberland farm size between 1756 and 1850, calculated as a five-year running mean. The data was derived from nearly 8000 farm advertisements giving the acreage of the unit to be let (or occasionally to be sold where there was indication of the acreage of the farming unit) which appeared in the Newcastle Courant between 1750 and 1850.⁸ The assumption is made that farms advertised to

4 Arthur Young, 'Northern Tour', 1770. Information on Northumberland farm size is in 3, pp.21-103.

5 Ibid., 4, p.341.

6. G.E.Mingay, 'Size of Farms in the Eighteenth Century', Ec.H.R.,14, 1961-2, p.469.

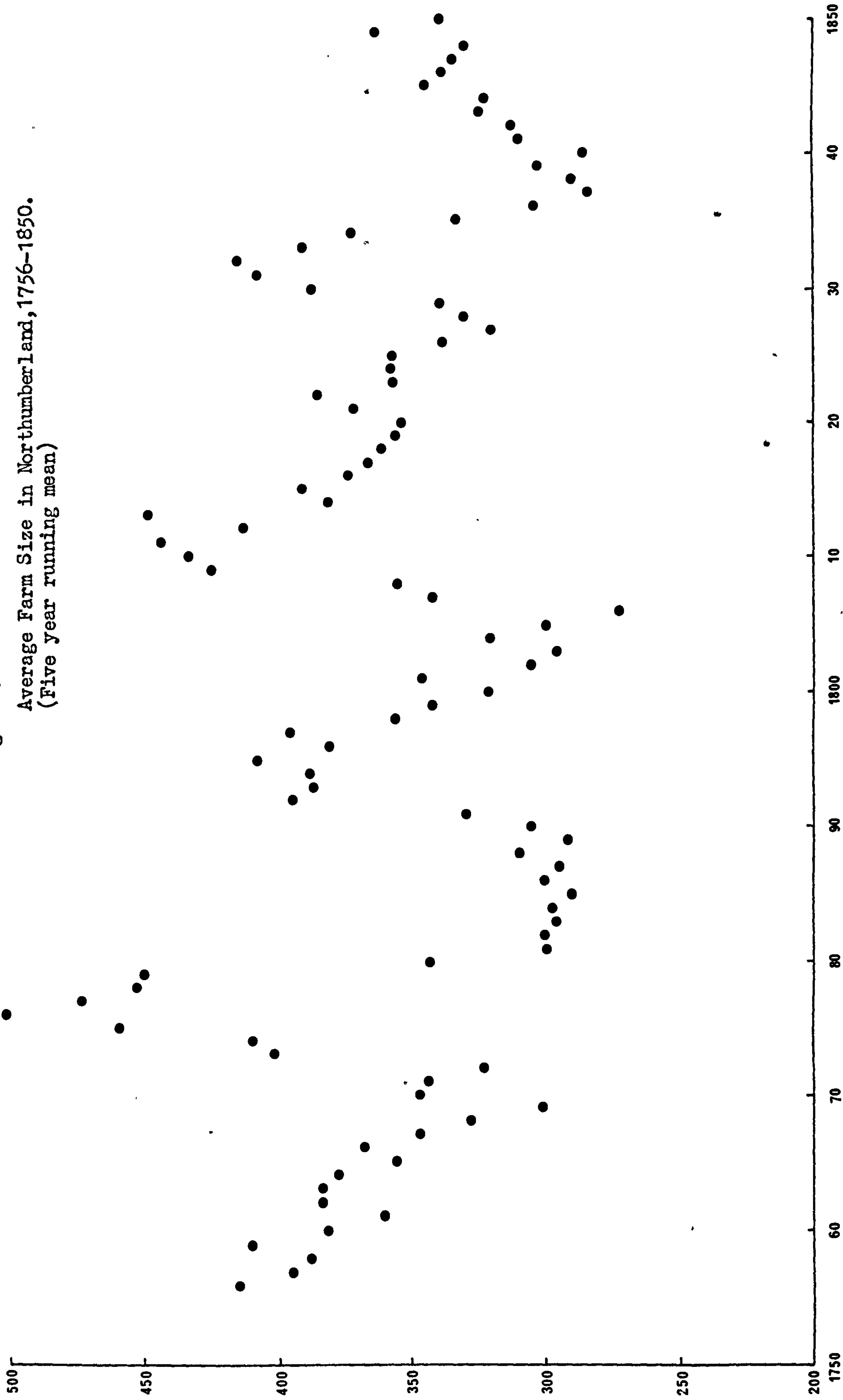
7. J.R.M^cCulloch, 'Statistical Account of the British Empire', 1837, 1,p.453.

8 An example of a typical advertisement is from the Newcastle Courant of August 13th 1774. "To be Let to enter on at May-day next, A Farm, being the West-side of Readhouse Estate, in the parish of Woodhorn, containing 150 acres, of rich, grazing and tillage land, and tenanted by the late Mr Cresswell, of Hauxley.-For further particulars, enquire at John Cresswell's, Esq; at Cresswell, between the 15th and 21st of August instant."

acres

Figure 5:1

Average Farm Size in Northumberland, 1756-1850.
(Five year running mean)



Source: Newcastle Courant, 1750-1850.

let were typical, in size at least, of all farms in the County. This may not have been the case if newspapers were used only as a last resort to get rid of farms that could not be let in any other way. It would then be possible to misinterpret an increasing tendency to advertise small farms, for example, as an indication of the increasing popularity of small units, whereas the tendency was a result of the very opposite, a growing dislike of tenants for small farms and a consequent difficulty in letting them. While some landlords certainly did advertise only when driven to it (see pp.79-81), it must be assumed that the increasing popularity of newspaper advertising, reflected in the large and growing number of advertisements for farms, was not a product of landlord despair, but of the proven success of this method of letting, and that the bulk of farm advertisements reflected a farm size situation which may be assumed to have been broadly representative of the whole County. Figure 5:1 shows a decline in average farm size from just over 400 acres in the mid-1750s to just over 300 acres about 1770. The most pronounced peak of the century occurred in the mid-1770s and was followed by a severe reduction throughout the 1780s and a moderate increase to about 400 acres in the 1790s. Later peaks occurred just after 1810 and 1830, and there was a descent to below 300 acres between 1838 and 1840.

While it is not suggested that changes of this suddenness and magnitude took place on all Northumberland farms or even the average farm, it is supposed that farm sizes mentioned in newspaper advertisements were responsive to public demand. Unlike some modern advertisement, farm advertisements before 1850 did not seek to create their own market, but rather to appeal to one that already existed. They may, therefore, be more sensitive indicators of the size of farm tenants wanted than of the size of farm the average Northumberland tenant occupied. This would then account for some of the extremes of Figure 5:1 but would not invalidate it as an indication, albeit an exaggerated one of the general trends in the

change of farm size in the County.

Some advertisements make it very clear indeed that farm size was often a matter decided by public demand. Farms were offered "either upon a smaller or a larger scale"⁹, "which may be made larger or smaller, so as to be most convenient to a tenant"¹⁰, or "in one, two, three, or four Farms, as can be agreed for"¹¹. Sometimes it is obvious that the landlord had anticipated market requirements and farms were offered which "may be divided into two Farms, having two Farm Houses and other necessary Conveniences thereon"¹², where "It is intended to divide the said Premises into two or three Farms"¹³, or which "may suit the Convenience of many to divide...."¹⁴. Other advertisements assume a demand for increased farm size. "Several small farms... One good Tenant to take the whole will meet with proper Encouragement and good Conditions."¹⁵ "They will be let together, being within a Mile of each other."¹⁶ Letters from land agents to landlords can betray the same anxiety to adapt the goods to meet changing customer demand. "Tho^s Pattison has declar'd hee'll rent the half of Kimmerston no longer, but Will have it all or Else none of it; and I'm apprehensive by report that Thompson has a friend Will joyn him, and is as keen of having the Whole as Pattison is."¹⁷

It is occasionally made clear that one attraction for landlords of small farms was the higher rent per acre these could sometimes command. "Jeffreys farm I am afraid will not let at 20s per acre unless put into

9 Buston Barns, N.C., Feb. 5th 1791.

10 A farm near Barnardcastle, N.C., Dec. 2nd 1786.

11 Embleton, N.C., April 24th 1756.

12 Hawkwell Farm, Stamfordham. N.C., Oct. 4th 1806.

13 West Chivington, N.C., Nov. 6th 1762.

14 Redhouse, Newbiggin, Woodhorn. N.C., June 11th 1808.

15 Dalton, Hexhamshire. N.C., Nov. 3rd 1804.

16 Black Hall and Windy Hill, Hexhamshire. N.C., Oct. 6th 1804.

17 Letter of Robert Burne to Sir John Delaval, Oct. 6th 1763. NCRO/2DE/4/52/3

small farms."¹⁸ Apart from a possible immediate financial incentive, there was also a moral argument in favour of small farms; that they were the vital bottom rung of the agricultural ladder by which the hard-working farmer ascended to successively larger and more remunerative farms as an apparently inevitable consequence of his own endeavours. That this was not a general process is certain, particularly in a county dominated by large farms, paying large dividends to their tenants but requiring high levels of capital investment to run them.¹⁹ While shortage of capital restricted the size of farm a smaller farmer could afford, plentiful financial resources meant that richer tenants could choose the size and location of farm they wanted; but both were equally and separately constrained, the one of necessity, the other by choice. "The evil is without remedy as no farmer with capital to choose his own locality would be likely to migrate into the districts of Hexhamshire and Whittonstall."²⁰ Parkinson thought that large farms needed so much capital that promotion of farmers was stifled wherever they predominated and that tenants on the smallest of farms turned to other activities rather than try to make their way in agriculture.²¹ This was actively encouraged by some landlords and may have been an inducement to create or retain small farms where other activities were possible. Small farms at West Denton and Wallbottle were let to tenants who also worked on the waggon ways,²² and one of only twenty acres at Monkseaton was, because

18 Letter of Joseph to Sir John Delaval, March 7th 1781. NCRO/2DE/4/13/24.

19 Young calculated that the capital needed for a farm of two or three hundred acres around Gosforth or between Morpeth and Alnwick was £300 for each £100 of rent. A farm of 500 or 1000 acres he supposed would need about £500 for each £100 of rent. Arthur Young, 'Northern Tour', 1770, 3, pp.21, 34, 76.

20 John Grey in 1835. PRO/ADM/80/20.

21 Richard Parkinson, 'The Experimental Farmer', 1799, 2, pp.245-6.

22 N.C., Nov. 5th 1763 and April 2nd 1785.

of its size and situation, "particularly eligible for a Butcher".²³
 When John Hall's farm near Ford was advertised, only one of the nine proposals received came from a farmer and the land agents observed "that Carters can afford much higher Rents than any other Person whatever upon small Farms".²⁴

One major disincentive likely to dissuade landlords from nonchalantly splitting their farms was the expense of the new farm buildings that would certainly then be necessary, and as unnecessary should the larger farm become wanted. When Rudchester was advertised for sale in 1769, more than half the advertisement was taken up with its "good accommodations of housing, granaries, barns, byers, stables, hemmels, etc. and as completely, substantially, and handsomely finished as any tenants can desire, being newly built within these three years, and so as to answer the partition of the estate into lesser farms".²⁵ It must be assumed that unless there were powerful specific reasons for creating small farms from large, such as high rents offered by farmer-tradesmen, the expense of new buildings alone would prohibit division. When Doddington was to be let in 1776, the land agent wrote warningly to his landlord, "none I find now will bid for that is able for such a Farm together, nor will Wilkie go any further without a spur, and if Divided will want sundry Buildings must soon be thought off:...."²⁶

Where large farms were created or already existed, it is difficult to see what attraction there would have been in dividing them. According to the philosophy of the day, they afforded the greatest profits to landlord and tenant alike and were the means most assured of bringing

23 N.C., March 11th 1820.

24 John Carr and Thomas Fitzwalter to Lord Delaval, Dec. 6th 1806.
 NCRO/2DE/4/60/35.

25 N.C., Nov. 11th 1769.

26 Joseph Hutchinson to Earl Tankerville, Sept. 1st 1776.
 NCRO/Tankerville Box 4/C/14 unsorted.

agricultural improvement and so yet higher profit for both parties.²⁷

It is fascinating that opponents of these large Northumberland farms were reduced to arguing that they were undesirable because they were too profitable and that the profit should have gone to ^{the} ~~may~~ smaller farmers who would not have been insulated by massive capital from the necessity of selling produce immediately.²⁸ Perhaps the only reason that might have induced a landlord to divide a large farm would have been a difficulty possibly experienced in times of agricultural depression, of finding a single tenant sufficiently wealthy and courageous to risk his small fortune. It would then have become necessary to split large farms. If this happened, then troughs in average farm size in Figure 5:1 might be expected to coincide with times of depression. Low average farm size occurs between 1768 and 1772, 1780 and 1791, 1800 and 1806, 1816 and 1829 and 1837 and 1842, periods not identical but bearing some relation to times of low prices and reduced rents in Northumberland (see chapters VI and VII).

"Northumberland, which has consistently had a high percentage of large farms, has never had a high arable ratio, was not affected by Parliamentary enclosure and furthermore lay within that part of England influenced by the Celtic system ...; the county had, however, a particularly high proportion of its acreage in large estates, and it could be this factor which here explains the predominance of the large farm."²⁹ It was not, however, a factor evident in the regulation of farm size elsewhere, nor, when the small farm policy of the Second and Third Dukes of Northumberland is considered (see p. 140) should it be regarded to have been universally the case in Northumberland. Map 5:1 traces Northumberland proprietors by Land Tax districts using the assessments for 1806.³⁰

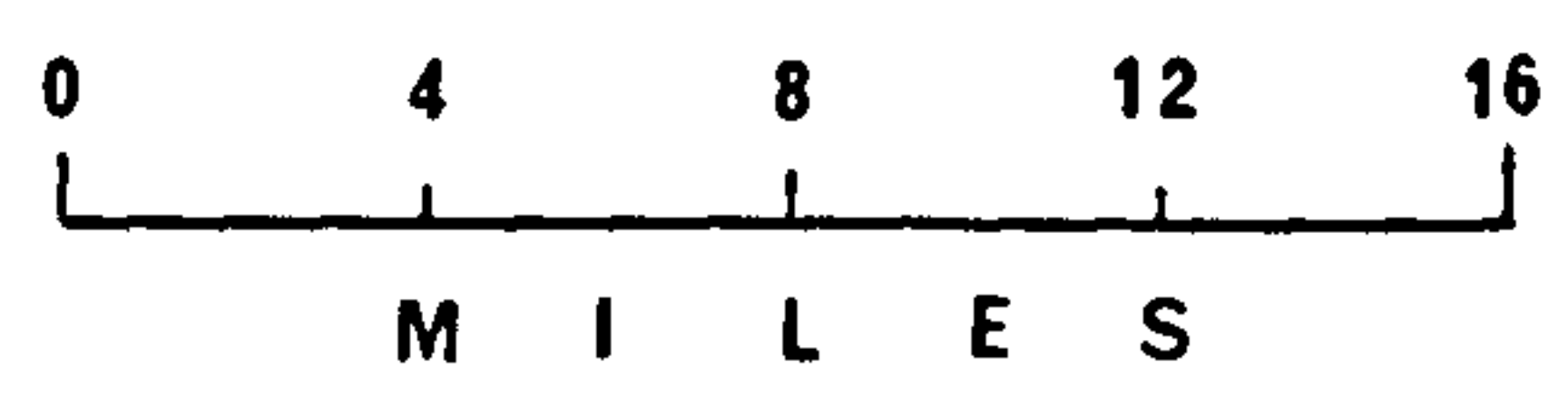
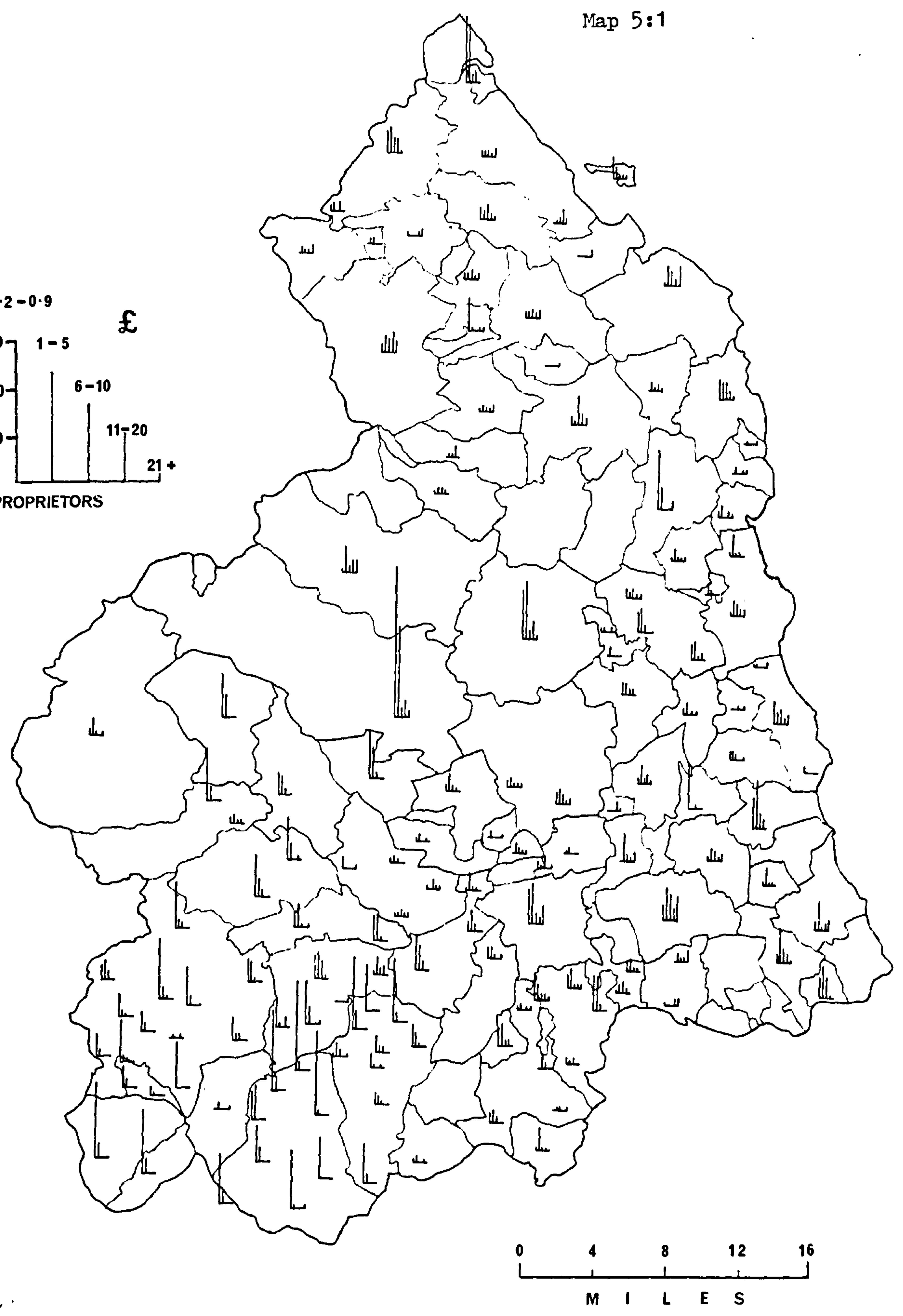
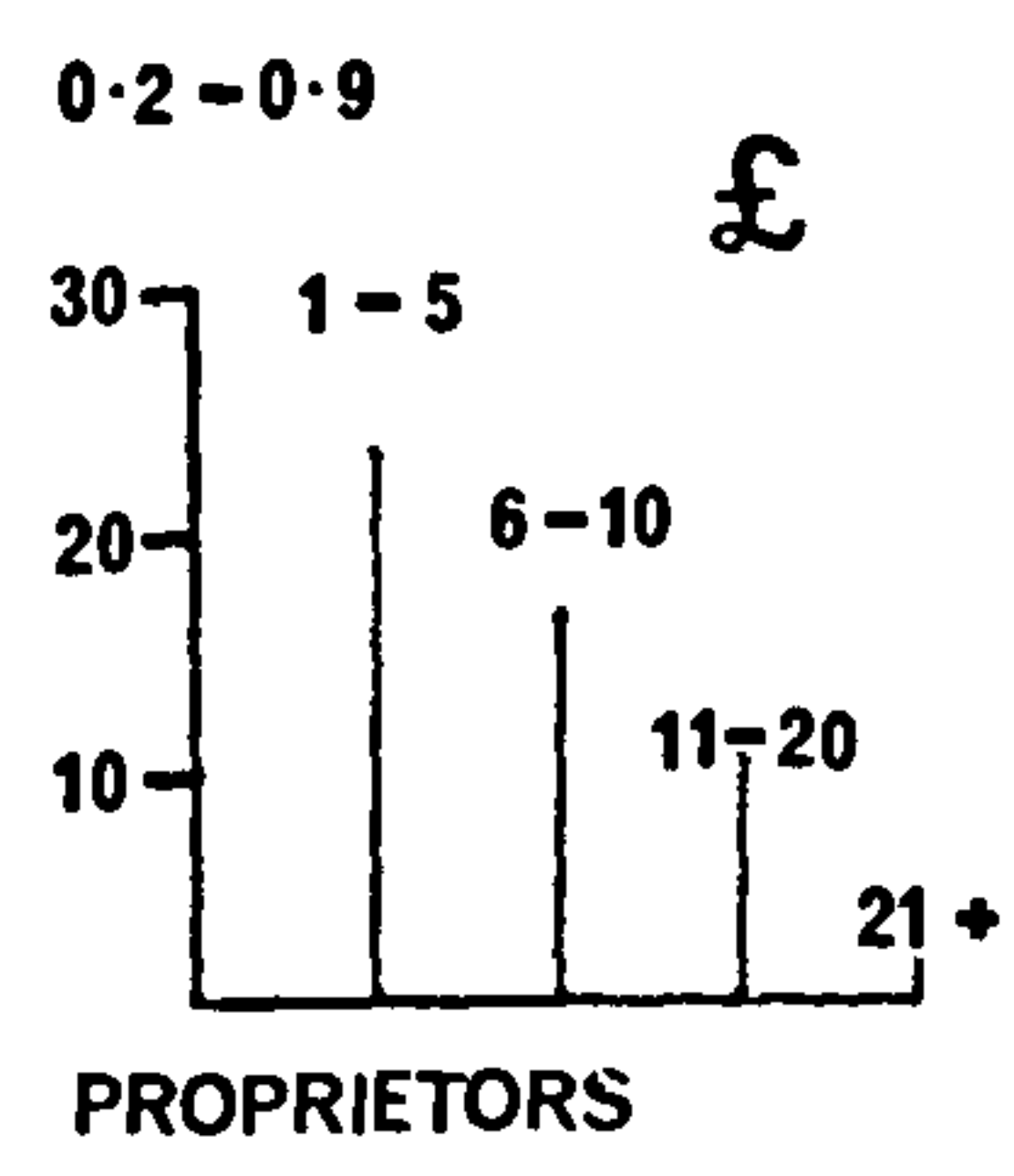
27 See, for example, Bailey and Culley, 1805, pp.29-30.

28 Richard Warner, 'A Tour Through the Northern Counties of England', 1802, 2, pp.8-9.

29 D.B. Grigg, 'Small and Large Farms in England and Wales', Geography, 48, 1963, p.274.

30 NCRO/QRP/40-41.

Map 5:1



Comparative Local Estate Size by Land Tax District.

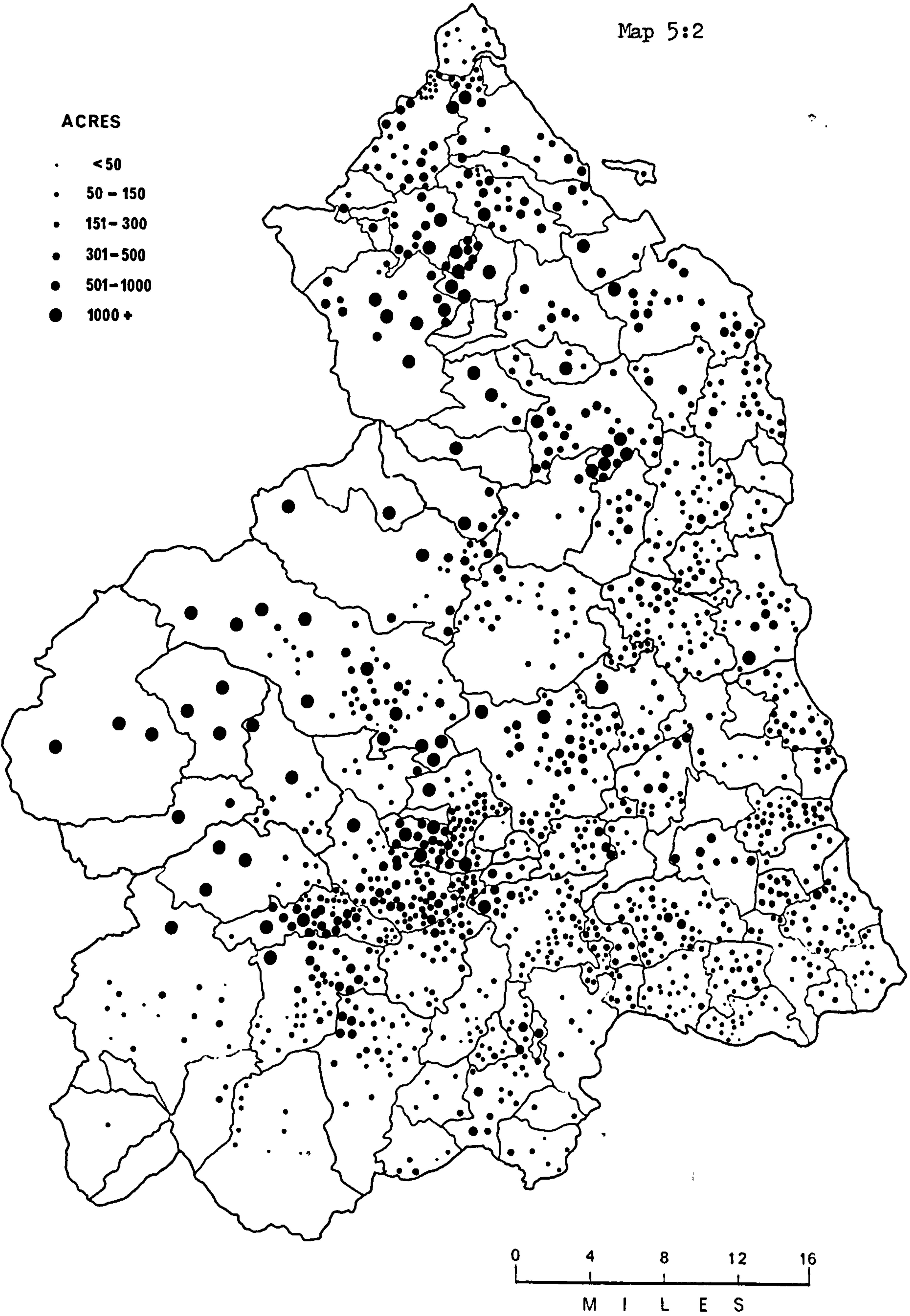
Source: 1806 Land Tax Assessment, NCRO/QRP/40-1

It suggests a large proportion of small proprietors in most parts of the south, but particularly in the south-west, in Elsdon, Whittingham and most of the old Simonburn area, and near the towns of Morpeth, Alnwick and Berwick. The north and much of the coastal area are characterised by large proprietors. Land Tax records are not sufficiently reliable in Northumberland, where the tax was assessed on the proprietor and was generally payable by him, the tenant being responsible for all other taxes, to be used to determine the size of tenant holding. Hughes' work on a comparison of farm size on three estates in the south of the County with one in the north is of interest.³¹ Such comparison is naturally dependent on the sort of evidence usually only available for a very few of the biggest estates and conclusions made from it cannot be too cautious.

Certainly a more comprehensive and perhaps a more reliable means of determining relative farm size in the County is by use of the acreage data in the newspaper farm advertisements. Map 5:2 shows the locations, in acreage groupings, of farms advertised between 1750 and 1790. It is reasonable to assume that the lowest group, those farms under 50 acres, is under-represented if only because of the expense and bother of advertising such small farms through a medium unlikely to reach a large number of modest tenants. Other groups should be fairly represented. The map reveals a clear pattern of small farms in the south and large farms in the north. The occasional farm of under 150 acres occurs even in areas dominated by large farms, but they only proliferate in the south, in areas adjacent to the main towns and along the river valleys of the high ground in the west. The shortage of readings for the far south-west may be explained by the prevalence of small copyhold lands in this area (see p.152) suggested on Map 5:1 more likely to have been handed

³¹ Mark Hughes, 'Lead, Land, and Coal as Sources of Landlord Income in Northumberland between 1700 and 1850'. Ph.D. Thesis, Durham University, 1963, p.221.

Map 5:2



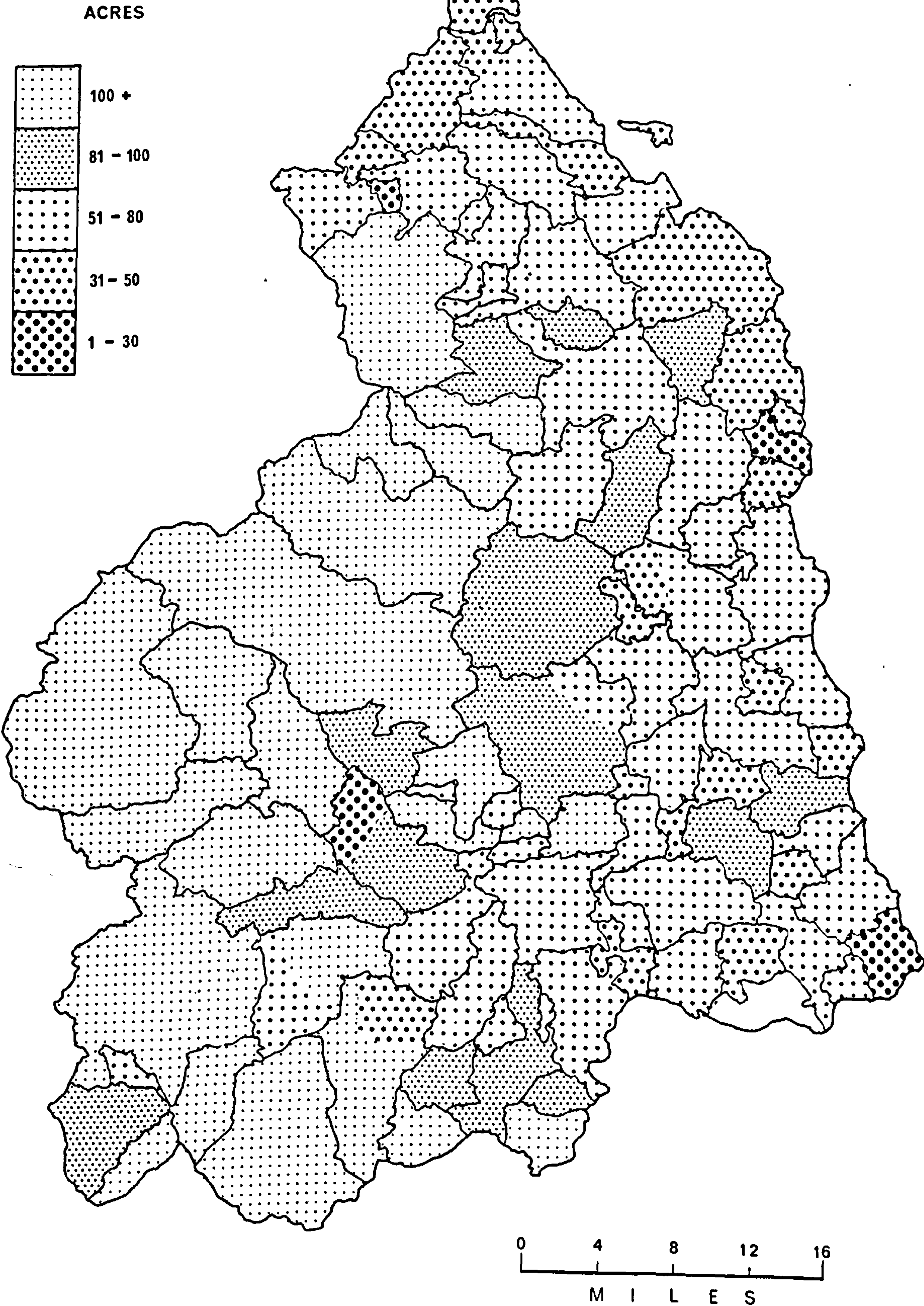
Farm Size, 1750-1790.

Source: Newcastle Courant, 1750-90

down from father to son or sold than advertised to let in a newspaper. The central part of the County and most of the coast south of Howick are dominated by farms of between 150 and 300 acres, though farms of between 300 and 500 acres are interspersed and become more common towards the north and west. The northern third of the County presents the clearest picture, particularly Glendale, with few farms under 300 acres, those between 500 and 1000 most common and a fair proportion exceeding 1000 acres. Such massive farms were to be expected on the sheep moors of North Tyne and Redesdale, but in an area where arable was as important as stock, they are quite remarkable. The relative importance of arable in the north and, indeed, the rest of the County, can be gauged in general terms from Map 5.3, showing acres per agricultural worker by parish from the 1831 Census figures. Greater manpower was needed to work arable land than to work the same area of pastoral land. The figures, therefore, give an approximate and generalised picture of basic land use, but clear enough to show that the large farms of the north and the small ones of Redesdale, Simonburn and the south-west did not conform to a conventional picture of large stock farms and small arable concerns. Farm size in Northumberland was, as Grigg surmised, as much a product of landlord policy and estate tradition as of agricultural land use. Maps 5.4 and 5.5 make use of the same 1831 Census figures. Map 5.4 shows the number of agricultural labourers per farm by parish and Map 5.5 those parishes in which occupiers who employed labourers were outnumbered by those who did not. The latter obviously suggests particularly small farm size in the south-west, and the former confirms the pattern of large farms in the north and small in the south. The larger number of labourers employed on the average farm near the Tyne Valley should not be interpreted as an indication of larger farm size than that of areas to the north and south, but rather as a sign of more intensive arable land use.

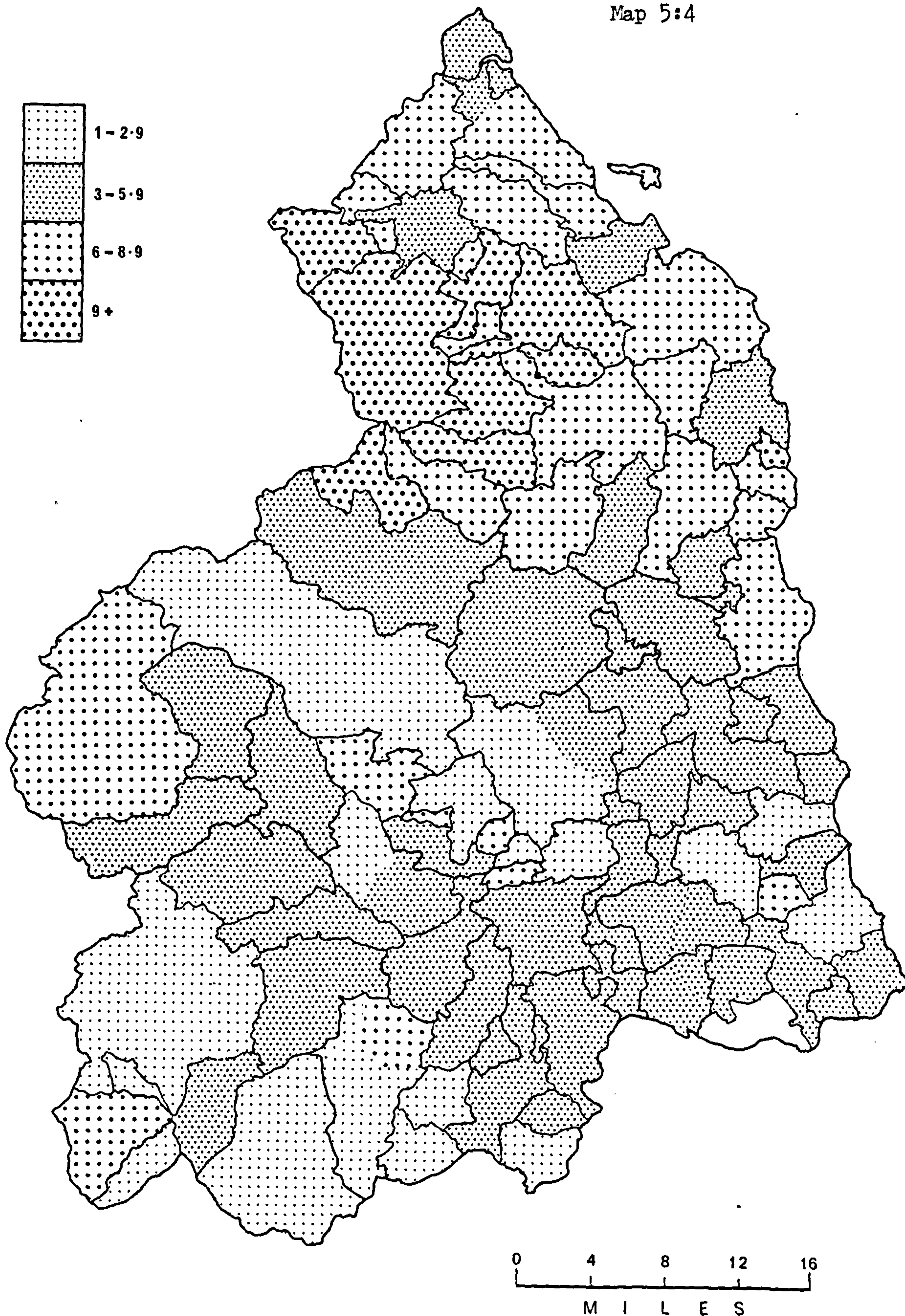
It is possible to test the impression of farm size gained from newspaper advertisements against that gained from the 1851 Census. Table 5.1

Map 5:3



Acres per Agricultural Worker by Parish, 1831.

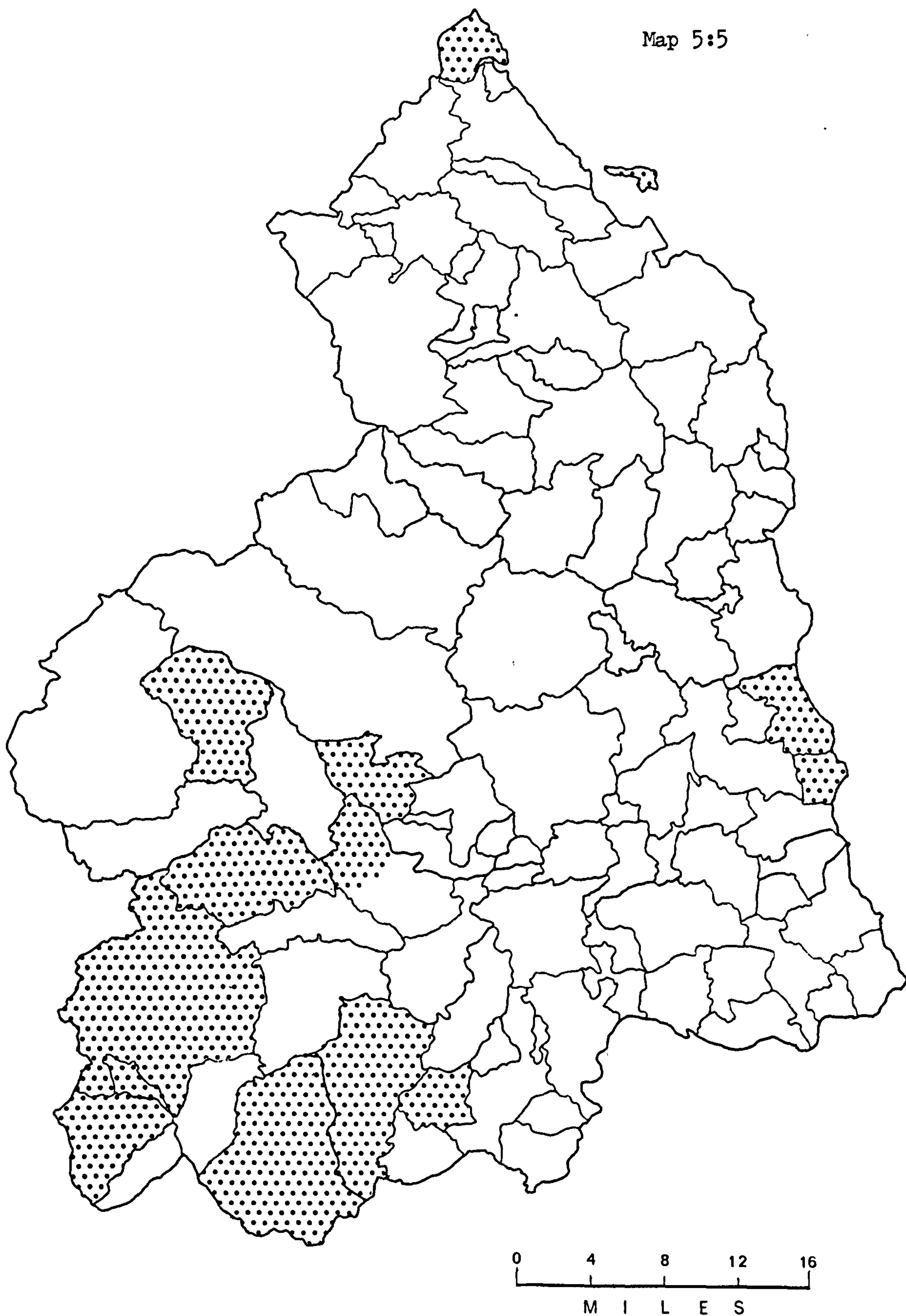
Source: 1831 Census



Hired Labourers per Farm by Parish, 1831.

Source: 1831 Census

Map 5:5



Parishes in which Occupiers not Employing Labourers Outnumbered
Those Employing Labourers, 1831.

Source: 1831 Census

shows the percentage of Northumberland farms in each of five acreage groupings using both the 1851 survey and newspaper advertisements between 1846 and 1850. Because they were unlikely to have been advertised, farms under 50 acres have been omitted from both sets of figures.

Table 5:1

Comparison of Proportions of Farm Size Groups in 1851 with those Derived from Newspaper Advertisements 1846-1850

	1846 - 50		1851	
	NO.	% of Total farms over 50 acres	NO.	% of Total farms over 50 acres
Total Number of farms over 50 acres	540	100	2119	100
50 - 150 acres	135	25.0	679	32.0
151 - 300 acres	197	36.5	739	34.9
301 - 500 acres	130	24.1	401	18.9
501 - 1000 acres	58	10.7	203	9.6
over 1000 acres	20	3.7	97	4.6

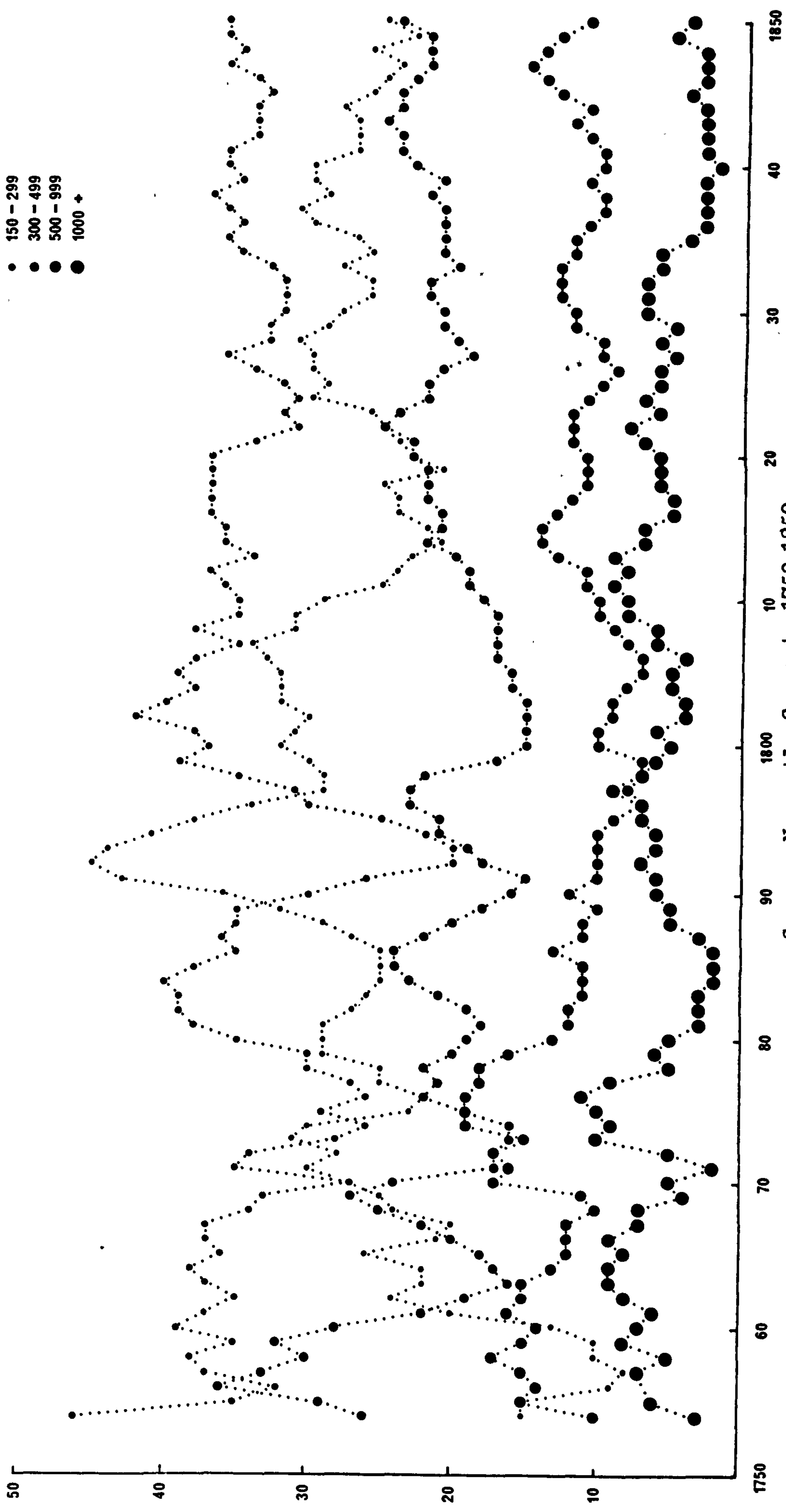
Sources: (1) Newcastle Courant 1846-50
(2) 1851 Census

Greatest divergence occurs in the 50-150 acre and 300-500 acre groups, and is again perhaps explained by a reluctance to advertise smaller farms, by the temporary lack of popularity of farms in the larger group or by changes in farm size between the two dates; but there is clearly enough similarity between the two sets of percentages to justify more meticulous use of the newspaper sources. Figure 5:2 shows the percentage of each of these acreage groups of total farms over 50 acres advertised between 1750 and 1850, expressed as a five-year running mean. Not surprisingly it reveals a complex situation, but certain broad conclusions would seem to be justified. It is surely significant that specimens of the smallest

Figure 5:2

Farm Size Groups as Percentage of All Farms Let Over 50 acres.
(Five year running mean)

- acres
- 50 - 149
 - 150 - 299
 - 300 - 499
 - 500 - 999
 - 1000 +



Source: Newcastle Courant, 1750-1850.

farm size considered were more numerous at the beginning of the period than only the most massive of farms and yet, by the end of it, these had become more common than those of any other group save farms between 150 and 300 acres. It is also significant that this latter group was always the most popular farm size in the County save for a period in the early 1790s, a period of rapidly rising rents, when farms of between 150 and 500 acres were temporarily replaced by those of the smallest size group. The largest farms, those over 500 acres, became more common in the 1770s and from 1800 until the end of the War, the depressions at the end of both periods perhaps rendering their high rentals even less appealing. But a more important conclusion is that the very largest of Northumberland farms remained attractive throughout the century and that usually more than 20 per cent of farm units in the County were in excess of 500 acres. Farms of from 300 to 500 acres present a fluctuating graph for the period 1750 to 1800, suggesting that it was in this group that farms were most frequently divided or joined and that this range of farm size was the most conducive to change. The situation altered markedly from 1800 with a steady rise in the popularity of this group until the early 1820s, after which this level was broadly maintained until mid-century. Indeed, the decidedly less erratic nature of all the curves after 1800 and particularly after 1820 is perhaps indication of more settled times when the attraction of and profit from agriculture had come to be determined by many more factors than farm size. Farming in the 19th century was much less a question of large scale being equated with large return; farms were no longer necessarily made as large as tenants were likely to be able to afford. Profits from farming were perhaps no smaller than in the later 18th century, but they were conditional on the judicious investment of capital by both landlord and tenant in more refined changes - in manures, drains, improved stock, buildings and implements.

It would be injudicious to glean much more from this data. What theory has already been constructed may rest on unsure foundations. More

exhaustive use of newspaper advertisements cannot be relied upon until more is known about who chose to advertise in newspapers and why they did so. The superiority of newspaper data lies in its unique comprehensiveness: faith in its accuracy is justified by the huge area - nearly three million acres - and large number of farms - nearly eight thousand - which it was possible to use in the compiling of Figures 5:1 and 5:2 (see Table 5:2).

Table 5:2

Total Number and Acreage of Farms Advertised to let
1750-1850 where unit size can be ascertained.

	<u>Number of Farms</u>	<u>Total Acreage of Farms</u>
1750-60	153	5,541
1761-70	243	85,980
1771-80	413	160,118
1781-90	552	163,302
1791-1800	515	184,405
1801-10	1,236	478,356
1811-20	1,544	571,977
1821-30	1,129	420,485
1831-40	1,113	349,480
1841-50	1,042	356,941
Total 1750-1850	7,940	2,826,485

Source: Newcastle Courant 1750-1850

Despite the excessive claims made by the improvers of the 18th century for the ideal of large farms, the literary evidence would seem to confirm that they became proportionally no more important in the County and that their propagation remained no more than an ideal even in the 1840s.³² Some very small farms had been amalgamated in the south,³³ and

32 Report of Mr Bigge's speech to the Tyneside Agricultural Society at Hexham. N.C., Oct. 4th 1844.

33 See, for example, the reference to this process in Whitfield after 1750 in John Hodgson, History of Northumberland, 1840, pt.2, 3, p.105.

Greenwich Hospital Reports of the early 19th century refer to the same process having happened during the latter half of the 18th century at Whettonstall and Thornborough,³⁴ in Warden, where "the district of Fourstones formerly consisted of eight or nine farms"³⁵ and in Wark, where Elrington Hall Farm was "formerly occupied by several tenants".³⁶ An earlier Report had commented on amalgamation that had taken place at Allerwash, a farm of 400 acres near Fourstones which, "having been formerly lett to 4 or 5 different Tenants... ought to be so again when the present Lease expires, being at present too large for one occupancy",³⁷ and it was also recommended that Scremerston South Side, then comprising 1579 acres near Bambrough, should be "divided into 3 or 4 at least when next lett"³⁸. Neither of these directives was ever effected, a situation illustrative of the difficulty in discovering much about farm size from even the fullest of estate records.

Perhaps other information can, however, be gleaned from such records to explain the apparent increased stability of farm size in the first half of the 19th century. A growing interest had been apparent from the mid-18th century in erecting efficient farm buildings.³⁹ This feeling that the (farmstead) onstead should be more than a shelter for humans and stock developed throughout the 18th century and resulted in the gradual creation both of more and of more specialized farm buildings. It became necessary to have a turnip store near the hemmel,^(byre) to have a wheelhouse on the north side of the barn, to have storage for the growing number of implements, to have

34 Report of 1818. NCRO/NRO/467/42/4.

35 Report of 1805. NCRO/NRO/467/42/2.

36 Ibid.

37 Report of 1775. PRO/ADM/79/59.

38 Ibid.

39 See, for example, the plans and comments of Daniel Garret, 'Designs and Estimates of Farm Houses etc for the County of York, Northumberland, Cumberland, Westmorland and the Bishoprick of Durham', 1747. NCRO/ZAL/89/35.

capacity for stall-feeding and to have a respectable house for the tenant, if not his employees.⁴⁰ The Greenwich Hospital Reports of the early 19th century contain ample evidence of farm buildings necessary because of "the improved state of husbandry in the North"⁴¹ or because "the great change of the System of Agriculture which was then [1805] taking place in most places required new additional Buildings, and in many an entire new Arrangement".⁴² A Report of 1870, referring to Scremerston, states, "The buildings were chiefly erected, very substantially, early in the present century, and must have been early examples of that four-square erection of farmsteads which is now generally adopted as best suited to secure the least exposure".⁴³ There is no doubt that such improvement was carried on throughout the first half of the 19th century⁴⁴ and is but one example of Northumberland agriculturists utilising capital to make the most of existing agricultural conditions rather than to seek radical changes, as of farm size, in them.

The unbridled enthusiasm of the 18th century agricultural speculator had been replaced by the guarded optimism of a more mature 19th century agricultural investor. The utilitarian Northumberland farmstead with its "ugly ranges of building, the chimney poking up as if it would like to be taller, the altogether unpicturesque appearance at a distance, and the untidyness of the nearer view"⁴⁵ which so depressed the Southern traveller, was the product of years of judicious investment in an agricultural industry, for which investment radical changes in farm size had long been no alternative.

40 The particular requirements of a Northumberland farmstead are best explained in J.C.Loudon, *Encyclopaedia of Agriculture*, 1833, pp.482-4.

41 Report of 1815. NCRO/NRO/467/42/3.

42 Report of 1818. NCRO/NRO/467/42/4.

43 Report of 1870. PRO/ADM/79/62.

44 See, for example, Professor John Wilson's comments on Sir Matthew Ridley's Estate at Blagdon in his articles in the *Newcastle Daily Chronicle*, July, 1864. A reprint is in NCRO/ZSW (Additional and Miscellaneous), dated, 'Capheaton Office; Sept.1st, 1864'.

45 Walter White, *Northumberland and the Border*, 1859, p.225.

VI

AGRICULTURAL RENT

There are two basic reasons for an interest in agricultural rent. They are particularly apposite in Northumberland where the Land Tax Returns and all other evidence suggest that owner-occupiers were rare and that only where customary and copyhold tenure were common, in the far south-west of the County, was there even a pale shadow of yeoman predominance. In the strictest sense, this was a landlord's landscape. The first of these reasons is in order to examine the argument that level of rent was a factor sufficiently powerful to influence and even to produce agricultural improvement. It will be more appropriate to deal with this subject elsewhere (see pp.113-20), but the general tenor of the argument was that under-rented farms gave tenants no incentive to improve.¹ Present concern is with the second reason. It is supposed that agricultural rent offers a convenient approximation to contemporary agricultural value of land and that both spatial and temporal differences in this value are worthy of consideration in that they may reveal much about the pace of improvement.

It is, however, over simplistic to say that improved rental is a certain indication of agricultural improvement or even that such improvement must have been responsible for one rental being significantly higher or advancing more rapidly than another. Rent level was controlled by a great many factors:- by quantity and quality of land, by locational factors such as climate, exposure, drainage, labour costs, agricultural prices, cost of living, proximity to markets, as well as by the state of enclosures, roads, watercourses, buildings, liability to customary and fixed payments, tithe, taxes, length and conditions of lease, terms of

1 Arthur Young, Northern Tour, 1770, p.376; Arthur Young, Political Arithmetic, 1774, p.275; J.C.M. Culloch, Statistical Account of the British Empire, 1837, 1, p.533; Notes by W.H. Sitwell, c.1850, NCRO/NRO/470/52.

mineral, game and timber rights, etc.² A change in any one of these conditions was capable of producing increased rental, but would not necessarily be labelled an agricultural improvement. Landlords were often criticised for increasing rents without improving. "Many there are, who, with a cool indifference respecting either the improvement of the country or the situation of their tenants, seem to think, the chief business of a landlord ought to be an unremitting attention to the extension of his rent-roll, without ever duly considering, that if additional rents are demanded, means should be furnished by the introduction of better systems of husbandry, improved breeds of stock, and the expenditure of money in the improvement of the property, by which tenants may be enabled to discharge such further obligations."³ Lord Delaval's musings on the subject, contained in the jottings he made on agricultural improvement between 1793 and 1805, are equally interesting. "Improvements made by the Stock of the Landlord and not of the tenants. Other Estates though by the tenants and raised infinitely higher - have been trippled & quadrupled. And yet others late purch^d have been raised more in the course of 5 or 6 years without any money being expended on them."⁴ Clearly then, there was no immediate controlling link between improvement and either absolute or relative levels of rent. Yet it was always assumed that agricultural improvement would eventually produce higher rents. Farming was practised to make money, improved farming to make more money, and rent was simply the landlord's share of the takings. Successful agricultural improvements were likely to produce increased

2 William Marshall, Landed Property, 1804, pp.6-15.

3 James Donaldson, Modern Agriculture, 1795, 1, pp.386-7.

4 Sir John Delaval's Notes, 1793-1805. NCRO/2DE/44/7

rents - other things being equal - but perhaps only in the long term.⁵ Investigation of changes in rental are, therefore, only of value over a considerable period and only when used as a general and approximate indicator of agricultural progress rather than as a proof of it.

Northumberland rents were nearly all paid twice yearly in cash by 1750. In the south-west, customary services were due to the lord of the manor and appear to have been paid by copyholder and leaseholder alike until well into the 19th century. Sir Charles Monck on his Belsay Estate was still demanding "two days of leading with their draughts" from each of his tenants in the 1820s,⁶ but this must have been very exceptional. It seems that the estates of the Duke of Northumberland were the last leasehold lands in the County to retain the old system of a small nominal annual rent and a large fine payable at the death of the tenant or when the lease fell in. Between 1749 and 1754, this system was gradually changed to one of larger 'new' rents and smaller 'new' fines.⁷ From 1754, the term rack was used instead of new rent and both fines and old rents disappeared as new leases were granted.⁸ The changeover did not meet with the general approbation expected. "I cannot say that every one of the Tenants comes chearfully into the new Method; but upon the whole the Alteration takes Place with less grumbling and uneasiness than cou'd have been expected. All those (and they are not a few) who borrow money to pay their Fines must like it, being manifestly for their Advantage."⁹ The new system demanded that tenants

5 John Wilson, Northern Farms and Farming, 1864, p.3. NCRO/ZSW/Add.& Misc.

6 Sir Charles Monck's Rent Day Speech, Nov.25th 1822. NCRO/ZMI/B41/4.

7 Memorandum Book, AC/Library/132.

8 AC/Div. vii/12.

9 Michael Ewen to Henry Harpur, Jan.10th 1749. AC/Q/1/80.

should pay 5% of the fine in annual rent,¹⁰ thereby easing the burden of a crippling fine for the tenant¹¹ and giving the landlord a constant regular income. Both parties then knew where they were and both could make more definite plans for the future.

Rentals seem to have increased throughout most of the second half of the 18th century. Although complete series are not easy to find for this period, this is evident from those existing for the Duke of Northumberland's Estate (see Figure 8:3, p. 146), for the Grey and Allgood Estates¹² and for the West Water Estate of Blakett of Matfen, shown in Figure 6:1. How much this was due to a general if moderate increase in grain and stock prices, to inflation or to real agricultural improvement is not apparent. It will be shown later that agricultural improvements undertaken by the Swinburnes on their North Tyne Estate did result in a slightly greater increase in rental than that experienced on the neighbouring and unimproved estate of the Duke of Northumberland (see p. 113), but other factors are known to have been successful in augmenting rental elsewhere. In 1774, the tenant of Passman's Farm in Dissington was allowed to break rotation and take in another 30 acres for tillage for his way-going crop in return for a rent of £200 instead of the old £160. In 1781, Passman's was still over-ploughed and a poor farm, but continued to be let to the succeeding tenant at £200, the same rent per acre as the neighbouring and apparently much improved farm at Penny Hill.¹³ In other words, retrogressive agriculture had secured the same short-term results in terms of rental as had improved agriculture. In 1781, the rent of Crookham Westfield in Ford was raised

10 Ibid., Jan.13th 1749. AC/Q/1/80

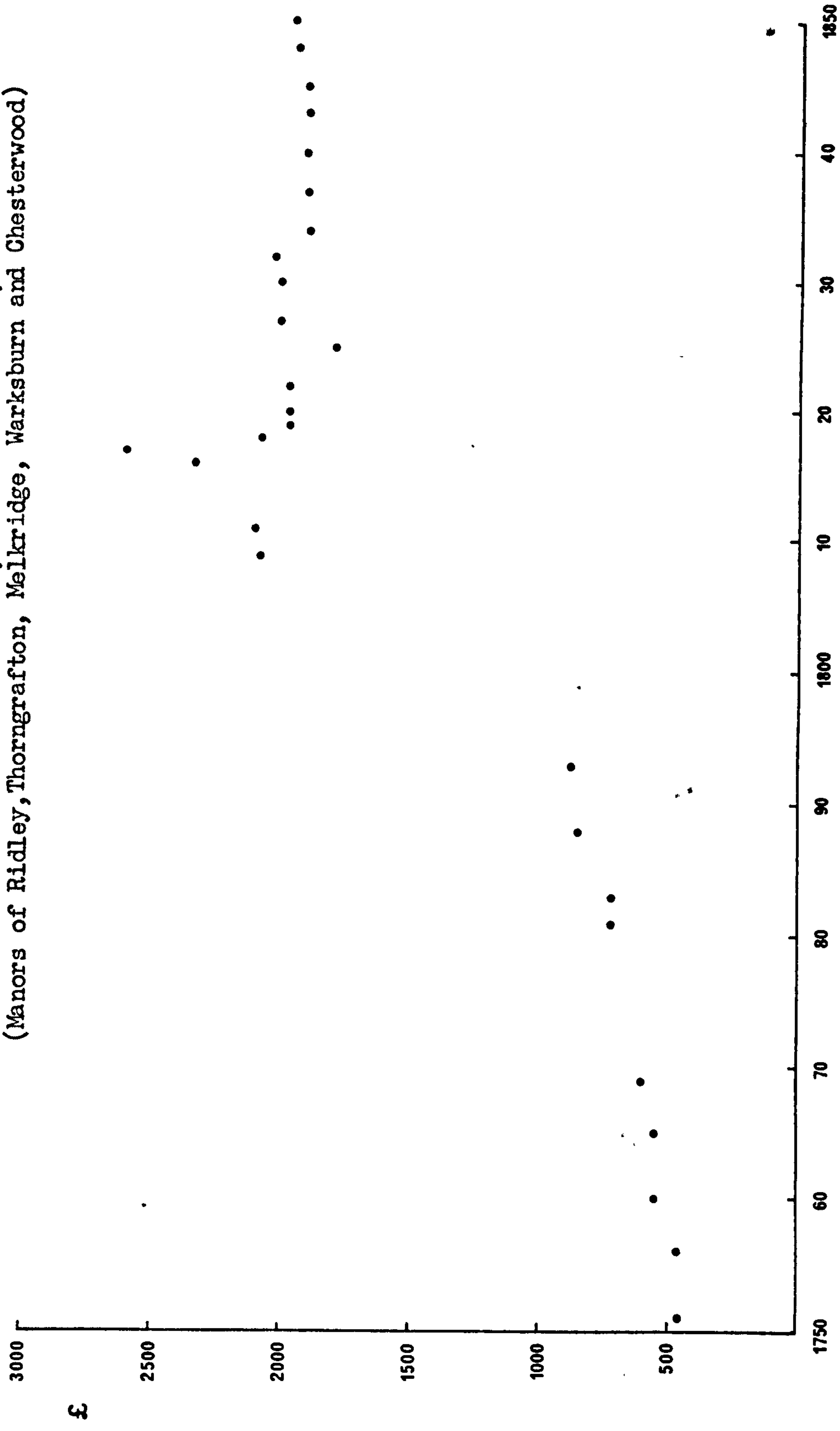
11 James Scott to Henry Harpur, Nov.7th 1749. AC/Q/1/79

12 Mark Hughes, Lead, Land and Coal as Sources of Landlord Income in Northumberland between 1700 and 1850, Ph.D. Thesis, Durham University, 1963, pp.190-5.

13 Joseph Oxley to Sir John Delaval, March 28th 1781. NCRO/2DE/4/13/31.

Figure 6:1

Annual Rental of West Water Estate, Blackett of Matfen, 1751-1852.
(Manors of Ridley, Thorngrafton, Melkridge, Warksburn and Chesterwood)



Source: NCRO/ZBL/65.

from £125 to £200, not because of any improvements on that farm but simply because even at £200 it would be let at under 15/- per acre while two neighbouring farms were fetching 16/- and 21/- per acre.¹⁴

Meldon Park Farm was let for £870 in 1818 having been let at £650 the previous year, not because it had been worth less, but because the landlord simply wanted it off his hands for a short time while he advertised for a richer tenant.¹⁵

Morrow Field Farm in Newlands was unimproved land of poor quality in 1805, unlikely it was said "to attract the attention of a great farmer, but from its magnitude a considerable advance of rent will probably be obtained at the next letting".¹⁶

Farms at North and South Middleton attracted an increased rent from 1758 even though "being highland Farms no Improvem^t has been made".¹⁷

In 1802, at least 20 would-be tenants submitted proposals for Middleton Hall and thrust up the rent considerably for only one offer had been made at the previous letting.¹⁸ It cannot be over emphasised that there is not necessarily a causal connection between agricultural improvement and rental improvement.

There can be no doubt that agricultural rent soared at the beginning of the Napoleonic Wars, a result, according to contemporaries, of high food prices¹⁹ and an understandable desire felt by many people to have a share in the new profits to be made from the land.²⁰

14 Ibid., March 30th 1782. NCRO/2DE/4/14/17.

15 1818 Greenwich Hospital Report. NCRO/NRO/467/42/4.

16 1805 Greenwich Hospital Report. NCRO/NRO/467/42/2.

17 Joseph Hutchinson to Lord Tankerville, Dec. 21st 1756. NCRO/Tankerville Box 4/C/17 unsorted.

18 George Culley to John Welch, April 11th 1802. NCRO/ZCU/6.

19 N.C., Oct. 25th 1794.

20 N.C., Dec. 6th 1794.

Tables 6:1, 6:2 and 6:3 give some idea of the sort of changes Northumberland rentals experienced during the War period.

Table 6:1

Rental of Farms in North Northumberland c.1790 - c.1800

Fenton	from £ 400 to £ 700	Ewart	from £ 400 to £1000
Doddington	£1300 to £1900	Horton	£ 250 to £ 650
Kimerston	£ 300 to £ 550	Ford Westfield	£ 200 to £ 525
Mindrum	£ 600 to £1000	Keistones	£ 900 to £1400
Norham Mains	£ 600 to £1000	Elwick	£ 500 to £ 800
Stamford	£ 700 to £1200	Goswick	£ 500 to £ 840
Hornington	£ 300 to £ 600	Mardon	£ 140 to £ 380
Reading	£ 510 to £ 840	Ross	£ 400 to £ 600
Lamerton	£ 500 to £ 800	Grindon	£ 300 to £ 900

Average increase of 18 farms c.1790 - c.1800 = 78%

Source: NCRO/2DE/19/4.

Table 6:2

Rent per acre of farms on Crewe Trust Estate at Bamburgh

	Acres	1795	1800	1805	1810
Bamburgh Town	240	12/3	16/8	22/9	35/7
Bamburgh Friars	188	-	17/6	22/-	27/4
Shoreston	437	10/-	16/6	20/-	22/10
Fleatham South and East	248	5/-	9/-	14/10	22/-
Fleatham Northside	276	4/10	8/9	13/10	26/2
Sunderland Middle Westfield	60	8/11	15/8	19/6	24/5
Sunderland Northfield	66	-	15/6	18/2	24/3

Average increase in rent per acre of 5 farms 1795-1810 = 220%

Source: NRO/452/C1/4-6.

Table 6:3Rental of William Witham's Netherwitton Estate 1799-1810

1799	-	£1908.18. 9
1803	-	£2392. 1. 0
1804	-	£2247.13. 0
1805	-	£2403.17. 0
1806	-	£2471. 1. 8
1807	-	£2564.14. 9
1808	-	£2752.18. 3
1809	-	£2939. 8. 6

Percentage increase 1799-1809 = 54%

Source: William Todd's Account,
Oct.2nd 1810. NCRO/ZCO/9/1.

In the same way that public and even Government reaction to possible food shortage caused a panic that made all food expensive and occasionally sent wheat prices to astronomic levels, so too did the anxiety shown by farmers to participate in such good fortune send rates to unprecedented heights. Desperation was manifest in the inflated offers made by tenants for farms. Where long leases taken in less prosperous times fell in, the rise in rent was colossal. Rent for Adderstone Mains leapt from £322 to £1050 and for Grindon from £900 to £2400 before 1806 despite reminders that "Such speculations can only be supported by the prices of produce not being lower than they have been of late years".²¹ The mania was perhaps encouraged in Northumberland by the established practice of the Greenwich Hospital Commissioners of letting their farms by secret proposals, a custom that other Northumberland landlords rapidly adopted from 1793 and which had the effect of sending rents soaring still higher (see pp.118-121).

21 F.M., 7, 1806, pp.122-3.

It was often held that competition for farms sent rents so high that the only farmers who profited were those who had had long leases prior to the change, but it should not be forgotten that "in most cases, an exaggerated advantage was reaped by the proprietors, owing to the excessive competition for farms which occurred".²²

A great deal has been written about the collapse of prices after the War and consequent agricultural depression, but fluctuation in prices occurred during the War and with farmers committed to paying rentals based on the highest prices, there were many reports of hard times and of farmers giving up before 1815.²³ When the fall in prices came, it is logical to assume that those farmers who had paid too dearly for their leases continued to suffer, but not that there was either serious long-term agricultural depression (see p.88) or necessarily a fall in 'long-term' rent. Individual farms nearly all suffered a diminution in rent as is shown in Figures 6:2 and 6:3, but only when compared with the fevered rentals of the War years. The totally unrealistic rent levels of wartime tend to mask the fact apparent in Figures 6:2 and 6:3 that rent increase from, say, 1790 to 1820 was greater than during any other part of the period between 1750 and 1850. In other words, 'depression' rentals were generally very much higher than those of the period of relative prosperity before the land rush brought on by the War.

M^CCulloch estimated that high wartime rental figures had generally been reached again by 1836 as a result of the fall in prices having been "counteracted in many districts by extensive improvements, particularly in the drainage and better management of land, the opening

22 N.C., Sept. 28th 1816.

23 e.g. F.M., 11, 1810, p.412; 12, 1811, pp.136, 562.

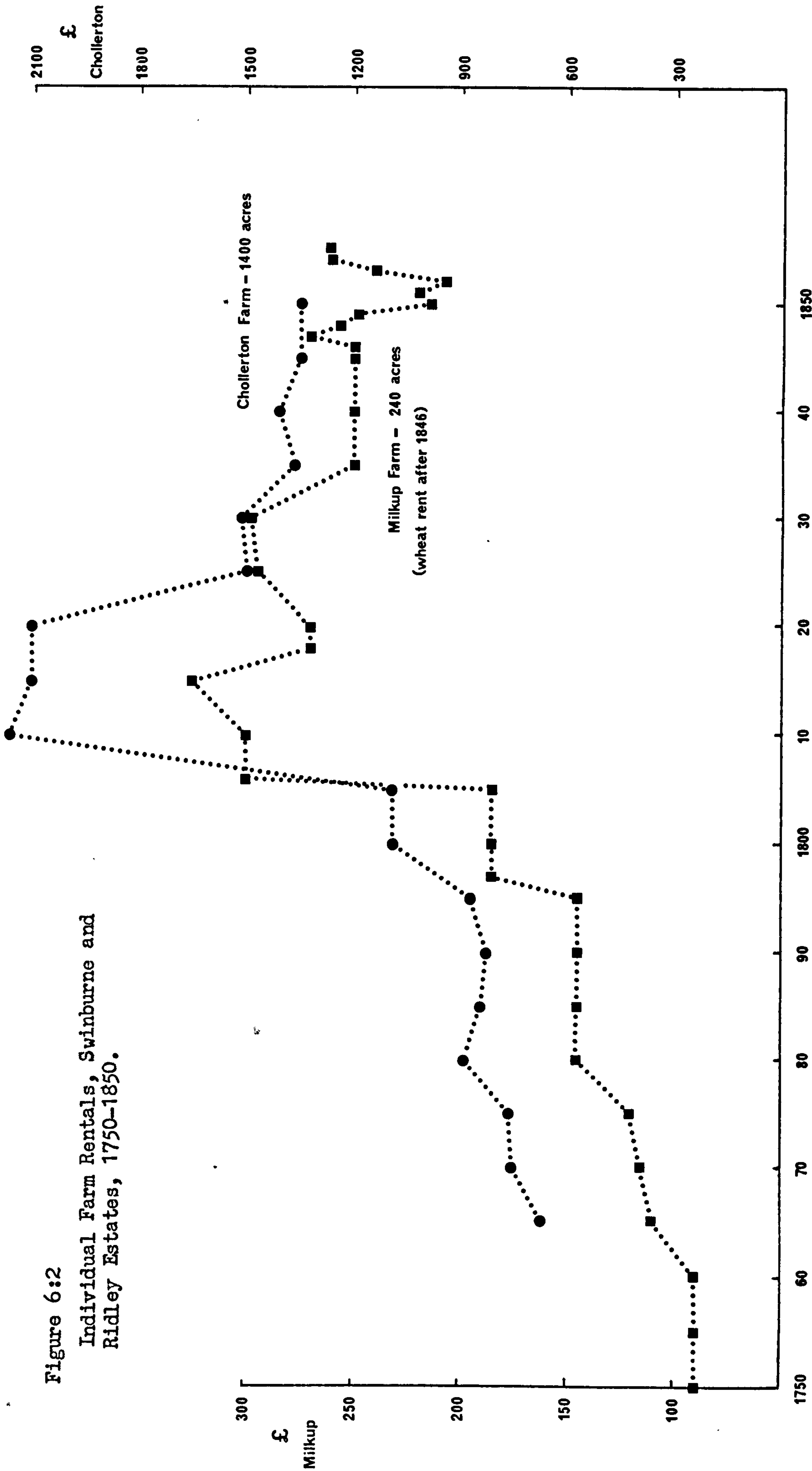
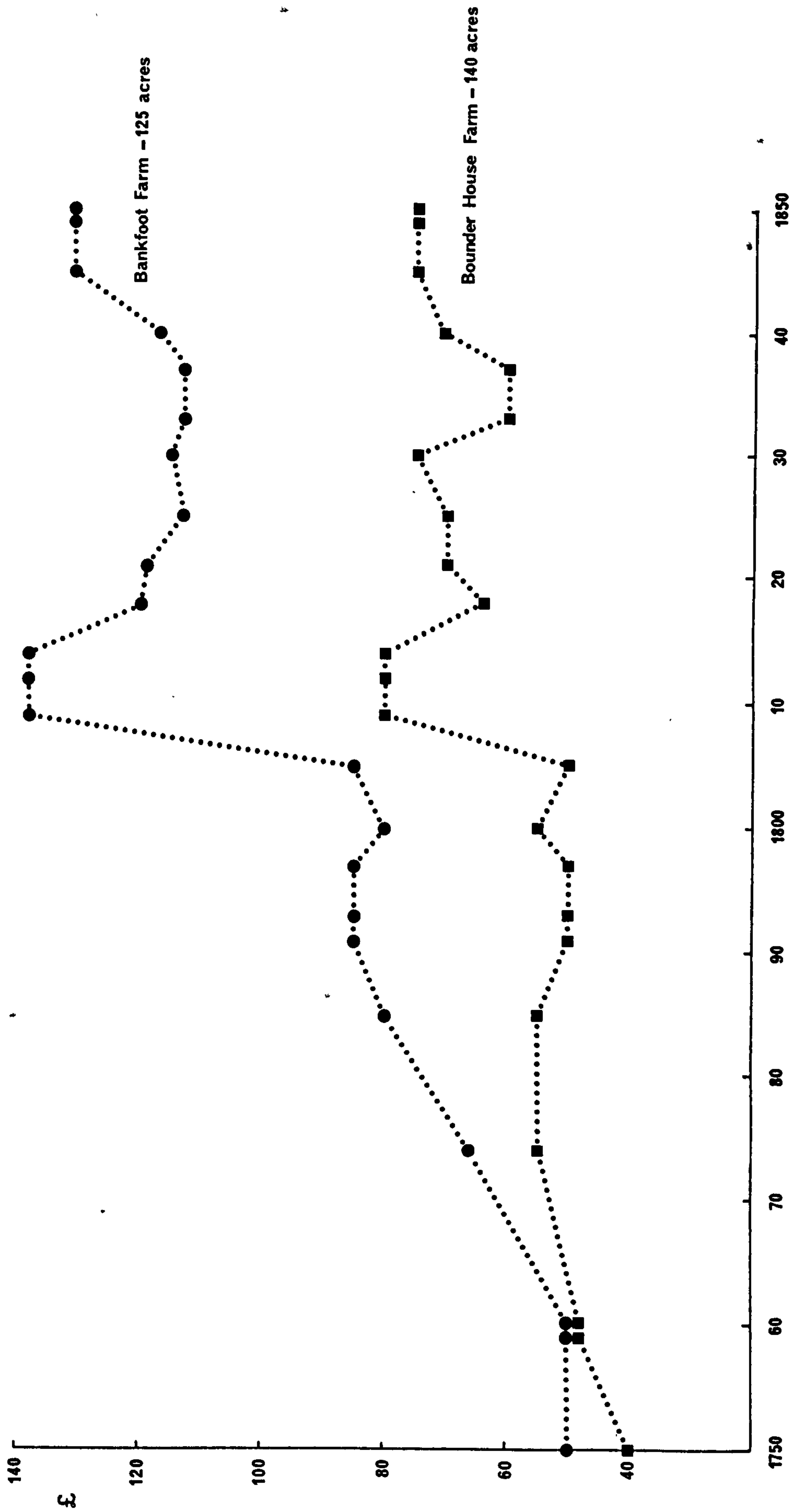


Figure 6:2
Individual Farm Rentals, Swinburne and
Ridley Estates, 1750-1850.

Source: NCRO/ZSW and Ridley Papers, Blagdon and Plessey Estates.

Figure 6:3
Individual Farm Rentals, Belsay Estate, 1750-1850.



Source: NCRO/ZMI.

of new and improved channels of communication, etc."²⁴ Thompson's findings, shown in Figure 6:4, for rent per acre of between 62,000 and 73,000 acres in England and Wales substantiate M^CCulloch's claim. Locally so too do the receipts of the Grey Estates shown in Figure 6.5 and the valuations of the Blakett Estates shown in Table 6:4.

Table 6:4

Inventory of Blakett of Matfen Estates
Based on 30 Years' Purchase Value

	<u>1772</u>	<u>1793</u>	<u>1815</u>	<u>1830</u>	<u>1846</u>
East and West Matfen	£33,743	£41,592	£92,691	£82,197	£79,364
Halton	£15,853	£17,610	£32,314	£37,704	£35,304
Halton Shields	£ 7,086	£ 8,492	£28,190	£18,800	£17,260
Clarewood	£ 9,422	£10,124	£29,675	£28,100	£24,200
Whittington	£ 4,393	£ 4,855	£ 7,386	£ 9,765	£ 9,895
Aydon . Castle	£ 4,843	£ 4,782	£ 6,249	£15,000	£14,400
Burnside	£ 3,202	£ 3,794	£ 8,574	£ 6,714	£ 6,894
West Water	£23,776	£34,733	£89,545	£80,850	£88,516
Crookbank	£ 2,013	£ 1,839	£ 4,865	£ 3,965	£ 3,965
Fallowfield	£ 5,080	£ 6,597	£17,471	£25,991	£20,971
TOTAL	£109,410	£134,416	£316,960	£325,367	£300,770
% Change when 1815 = 100	35	42	100	103	95

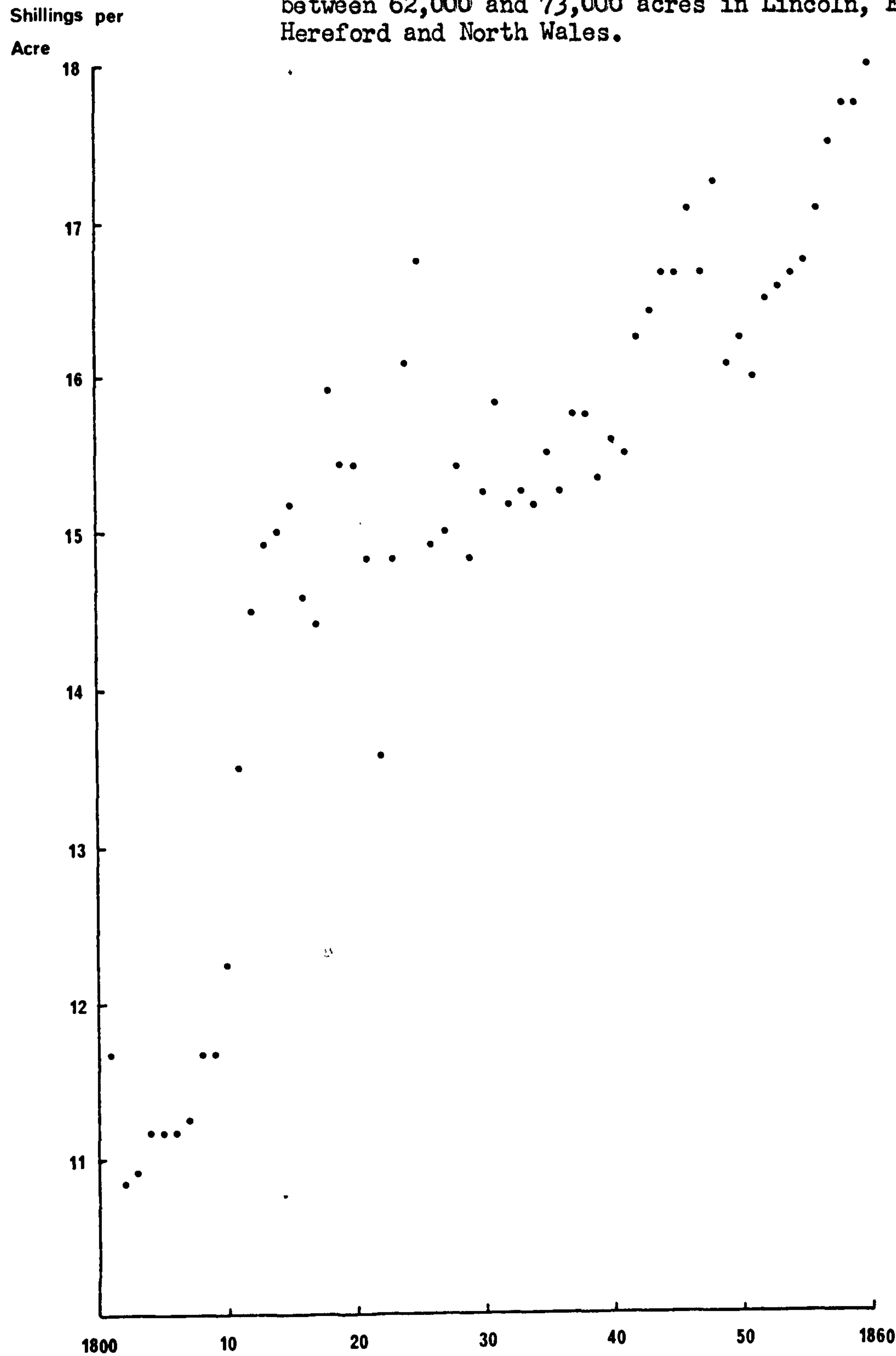
Source: NCRO/ZBL/65

Where substantial reduction remained, it may have been on poorer farms which, as with Crookham Westfield in 1781, had attracted higher rents not because of improvement in the farms, or even directly because of high

24 J.R. M^CCulloch, op.cit., 1, p.532. A study of rental decline in the period 1870-1900 has gone somewhat further in suggesting that the smallest reductions were associated with the largest expenditure on agricultural improvements. Richard Perren, 'The Landlord and Agricultural Transformation', Ag.H.R., 18, 1970, p.43.

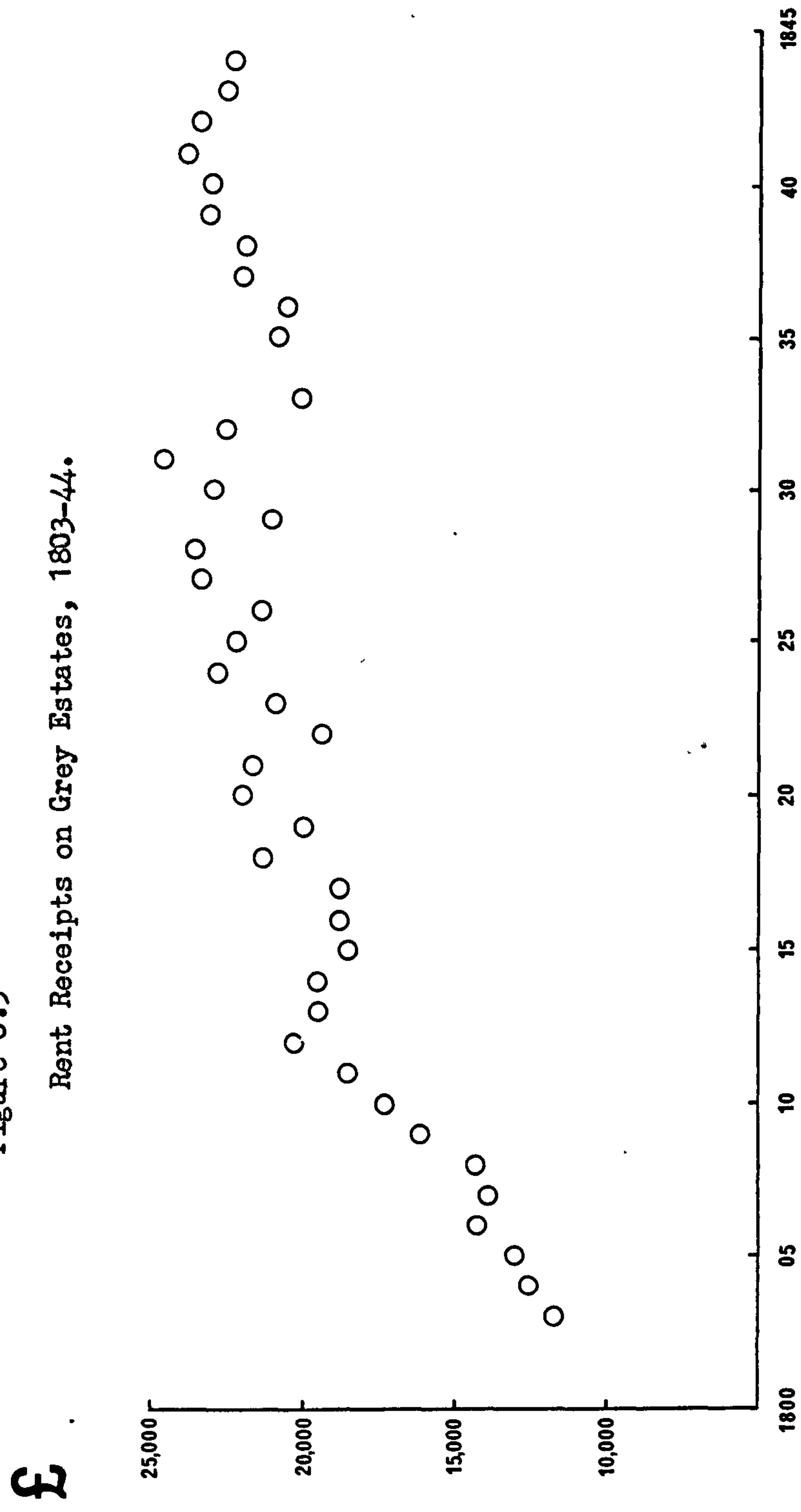
Figure 6:4

Rent per acre of agricultural land consisting of between 62,000 and 73,000 acres in Lincoln, Essex, Hereford and North Wales.



Source: Robert Thompson, 'An Inquiry into the rent of Agricultural Land in England and Wales during the 19th century', Journal of the Royal Statistical Society, 70, 1907, p.612.

Figure 6:5
Rent Receipts on Grey Estates, 1803-44.



Source: Estate Papers of 2nd Earl Grey, P & D, uncatalogued.

food prices, but simply because other farms were letting at fancy rents. Rental of farms on the poor arable soils of Brinkburn and Rothbury is shown in Tables 6:5 and 6:6. There can be little doubt that some such farms came nowhere near to restoring wartime rent levels before 1850.

Table 6:5

Rental of West Hepple Farm, Rothbury, 1819-1853

1819	-	£470
1832	-	£350
1834	-	£350
1836	-	£290
1840	-	£290
1846	-	£305
1849	-	£317
1850	-	£317
1852	-	£297
1853	-	£297

Rent Decline 1819 - 1853 = 37%

Source: NCRO/ZRW/322

Table 6:6

Rental of Brinkburn Estate, 1792 - 1850

	<u>Acres</u>	<u>1792</u>	<u>1806</u>	<u>1816</u>	<u>1841</u>	<u>1850</u>
Hope	279	£102	£170	£200	£110	£110
Linn	97		£ 22	£ 40	£ 25	£ 25
Woodhead	376	£130	£110	£125	£ 80	£ 76
Healycote			£100	£150	£ 60	£ 80
Cockshot	263	£130	£190	£230	£115	£106
New Houses	349	£170	£500	£420	£260	£260
Middleheugh	182	£ 95	£142	£200	£120	£180
Mill Head	50	£ 44	£ 95	£ 50	£ 50	£ 50
		<u>£671</u>	<u>£1329</u>	<u>£1415</u>	<u>£820</u>	<u>£887</u>
TOTAL						
Change when 1816 = 100		47	94	100	58	63

Source: NCRO/ZFE/52

The severity and significance of what is sometimes referred to as the 'depression' after the Napoleonic Wars and which appears depressed only when judged by euphoric wartime conditions, will be considered later (see pp.77-88). Present concern is merely with how far rent levels reflected agricultural conditions. Evidence exists which states that farmers were themselves responsible for difficulties they encountered in that they continued to offer extravagant rents for farms falling vacant. Certainly the proposal system of letting continued long after the passing of the wartime conditions which had made it popular. Landlords who would otherwise have given abatements or granted rent reductions were reluctant to do so when new tenants would offer increased rentals even at times of low corn prices, as in the 1820s.²⁵ "There is not a farmer gives up his farm for being too dear, but it is ten to one that it is let higher, or at least at the old rent. Now it is impossible for landlords to reduce their rents so long as farmers go on bidding for farms at this rate; and if there is any distress, the farmers have a great hand in making it themselves."²⁶ As late as 1833 the same observation was made.²⁷ Whyever then did farmers offer high rents only to complain about the hardship these brought? One reason, of course, was that for many years after the War, men hoped for a return of those conditions; the Corn Laws were the legislative vindication that another such crisis was possible. More important is the argument that wartime conditions had created a surfeit of aspiring farmers, all of whom had to find farms in the post-War period. Moreover, a farmer with all his capital tied up in his stock and with knowledge and skill adapted only to agriculture, had little occupational mobility. It may have been more comforting and even more profitable for such a man

25 'Cheviot', N.C., June 22nd 1822.

26 'An Old Farmer', N.C., April 27th 1822. See also 'Investigator', N.C., May 11th 1822.

27 'A Northumberland Farmer', N.C., March 9th 1833.

to farm in hope and at an immediate loss than to sell everything in a flooded market and chance his fortune in the wider world.²⁸

There was one way in which landlords could retain nominally high rents and still keep tenants who could not really afford to pay them. That was by offering abatements, simply a return to the tenant of that percentage of his rent needed to keep him solvent and farming. The Duke of Northumberland gave abatements to most of his tenants nearly every rent day between 1816 and 1836 (see p.146). At least two dozen other Northumberland landlords followed the same procedure, and newspaper reports of their generosity were numerous, particularly in the years 1780, 1834-5, 1843-4 and 1849-50 - all times of low corn prices - but also in the period 1830-1, when prices were not especially low but when harvests may have been poor and sheep rot was certainly rampant. Comparatively few Northumberland landlords found it necessary to reduce permanently the rentals of farms in lease.²⁹ Landlords who refused even abatements were termed 'hard-hearted':³⁰ those who gave them, 'munificent'.³¹ But there were also contrary voices which found much to criticize in the practice. Abatements brought popularity that could be politically useful and they also brought ready cash, for it was a universal requirement that all arrears be cleared before tenants were entitled to abatement.³² Hence tenants frequently had to sell produce at times of low prices or borrow money at high interest to qualify.³³ Abatements avoided the apparent defeat of rent reduction, and if times improved, the landlord could benefit by immediately claiming full rent. John Grey gave the example in 1850 of a landlord who had preferred to abate

28 F.M., 22, 1821, p.104.

29 Only six were reported. N.C., Feb. 24th 1815, March 9th 1816, Jan. 9th 1819, May 5th and Dec. 25th 1830, Jan. 10th 1835.

30 N.C., Sept. 14th 1816.

31 'A Northumberland Ploughman', N.C., June 2nd 1821.

32 1822 Greenwich Hospital Report, PRO/ADM/79/60.

33 'A Tyneside Farmer', N.C., April 20th 1822.

£200 to a bad farmer on a farm let for a nominal £1,000 rather than let it to a good tenant at £800.³⁴ The abatement system benefited those who farmed least profitably and who were least likely to improve the farms they tenanted. It is an excellent example of high rents representing and perpetuating the very opposite of agricultural improvement.

An alternative way by which landlords could counter periodic low prices and yet still reap high rents during more prosperous times was by means of a corn rent, that system by which all or part of the rent was calculated by the current price of corn and was therefore lower at times of poor prices than at times of good. This was a tactic first introduced to the County by the Duke of Portland in November 1815,³⁵ and continued by him throughout the first half of the 19th century.³⁶ Objections to the system were that, being based on past wheat averages, it was too slow to give immediate relief, and that wheat was no accurate indicator of the state of the market for meat, wool or even other grains.³⁷ Nor did corn rent cater for a poor harvest producing low yield but high prices.³⁸ Despite much discussion,³⁹ the system does not seem to have had many practitioners in Northumberland. Perhaps its greatest disadvantage was that it not only made uncertain the commitment of tenants and income of landlords, but also encouraged a "disregard to the state of the markets, the fluctuation of which is the great impulse

34 N.C., Jan. 11th 1850.

35 N.C., Dec. 2nd 1815; J. Bailey to Sir J.B. Riddell, Nov. 16th 1818, NCRO/ZRW/293; Notice to Duke's tenants, n.d., NCRO/ZRW/289.

36 NCRO/ZSA/12/16.

37 NCRO/ZHE/34.

38 Mr Chrisp to Newcastle Farmers' Club, 1859, NCRO/ZHE/34.

39 e.g. Notes by W.H. Sitwell, Jan. 10th 1850, NCRO/NRO/470/52; Thomas Rodger to William Lowry, March 3rd 1852, NCRO/Tankerville Box 1/D/3 unsorted.

to industry and skill".⁴⁰

Map 6:1 is produced from Schedule B of the Property Tax Assessment of 1815,⁴¹ and, adopting a technique partially developed by Sir John Sinclair⁴² and M^cCulloch,⁴³ attempts to show the relative value per acre of agricultural land at the end of the War. As might have been expected, land values decreased from east to west as altitude increased. The Tyne Valley is apparent as an area of higher rent, as is the north of the County, the coast and particularly the mining and industrial area of the south-east with its immediate agricultural hinterland.

Map 6:2 is based on the map and rentals given by Thomas Colbeck in 1847⁴⁴ and superimposes the rental figures given by Young for 1769,⁴⁵ of which Colbeck was probably aware. Agricultural land in the vicinity of Newcastle had always been expensive, and was also dear at least as far north as Gosforth in 1769. The arable lands of the coast had generally increased in rent from about 12/- to 30/- or 35/- per acre and the best permanent pastures and wheat land of Bamburgh exceeded the normal going rate at both dates. Good grazing land in the Stamfordham area certainly increased in value, but not the poor pastures and second-rate arable of the Upper Wansbeck or Rothbury areas. Greatest advance in rental seems to have been in Glendale and by the River Tweed in the very north of the

40 1822 Greenwich Hospital Report, PRO/ADM/79/60.

41 PRO/E/182/295. Schedule B taxed farmers, including owner occupiers, on their theoretical profits which were assumed to be three-fourths of the rent. Rentals under £50 were exempt, and those between £50 and £150 received various abatements on the sum of 2/- in the £ claimed from those paying rentals of over £150. A. Hope-Jones, *Income Tax in the Napoleonic Wars*, 1939, pp.20, 23. For the purposes of Map 6:1 all payments are assumed to have been at the 2/- rate.

42 F.M., 18, 1817, pp. 1-8.

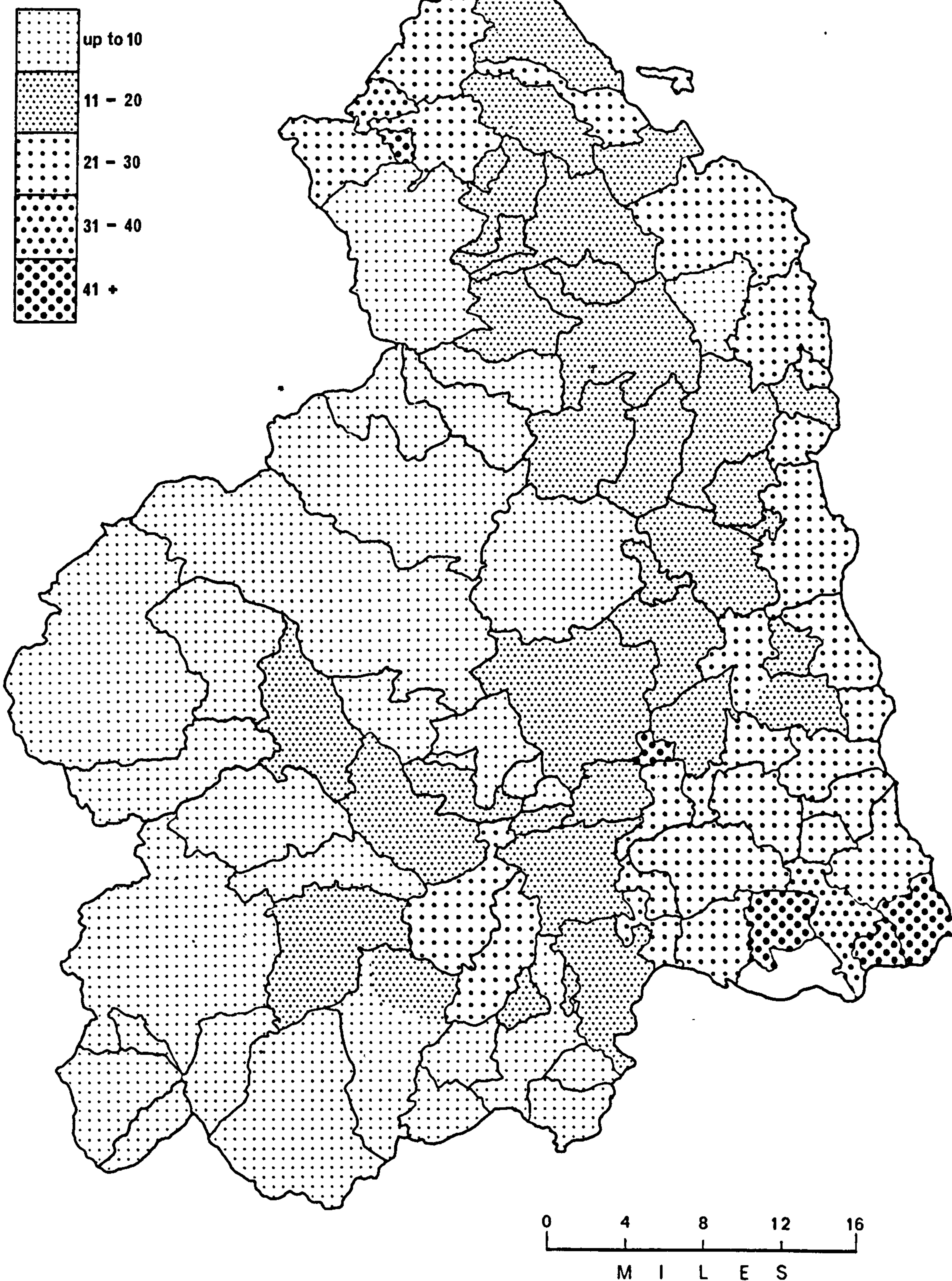
43 J.R.M^cCulloch, *op.cit.*, 1, p.531.

44 Thomas Colbeck, p.436.

45 Arthur Young, *Northern Tour*, 1770, 3.

SHILLINGS PER ACRE

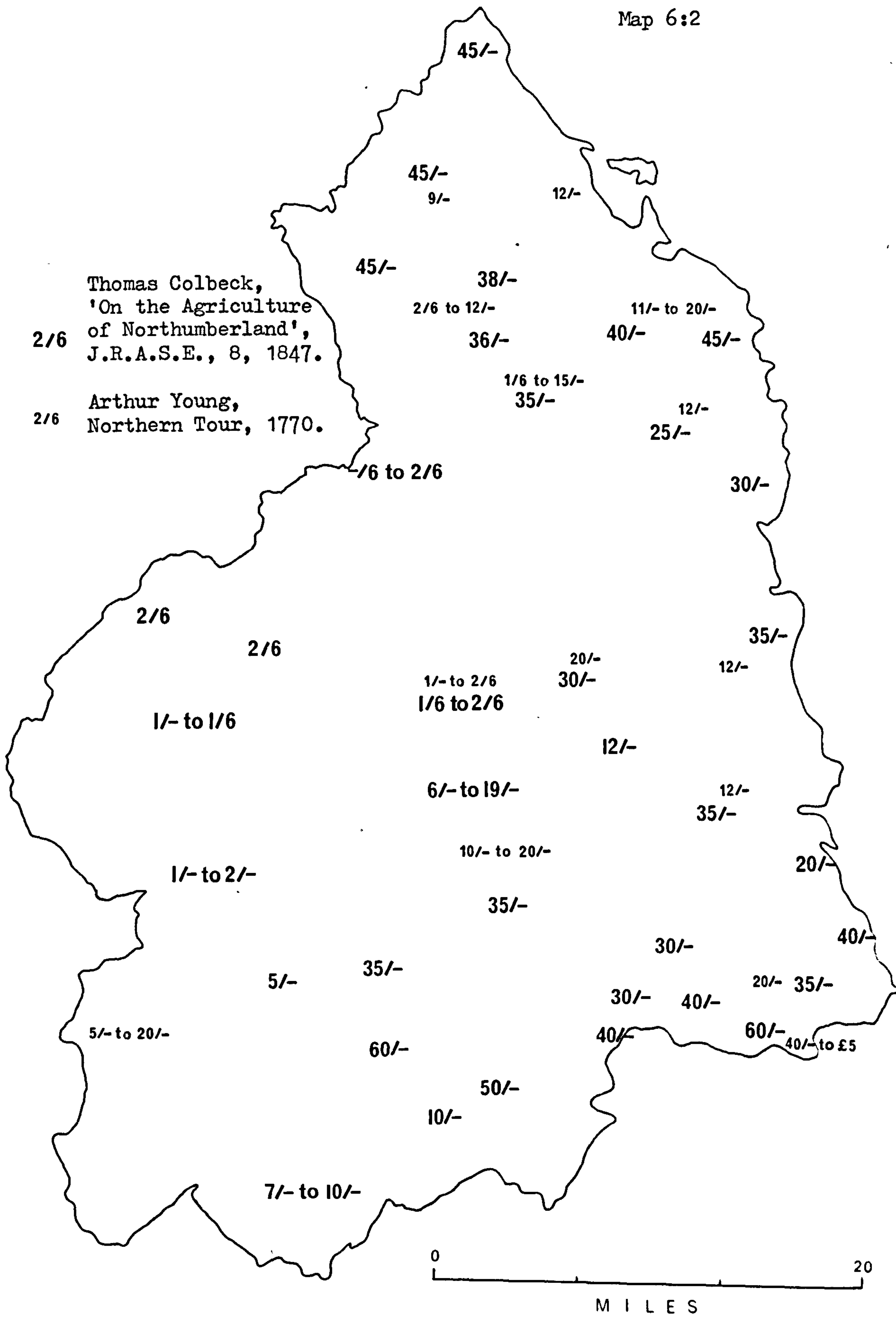
Map 6:1



Rent per Acre by Parish, 1815.

source: Property Tax Assessment, Schedule B.
PRO/E/182/295.

Map 6:2



Rent per Acre, 1769 and 1847.

County.

Though Thompson's land values in Figure 6:4 suggest that the rent of agricultural land reached a peak by mid century, other evidence indicates that Northumberland rents may not have achieved this. In 1855 it was asserted that Northumberland was the only part of England where rents were still below their 1815 level and that while they had averaged about 15/- per acre then, they were only 13/- per acre at mid century.⁴⁶ A footnote to this work suggests that only those parts of the County which could not grow turnips had failed to advance. To check this supposition the Extraordinary Gaol Rate Assessment of 1809⁴⁷ was compared with the new Poor Rate Assessment of 1848.⁴⁸ Both these were based on property values and assessments were made by township. Current rent levels were used to establish these values, but the greatest defect of the procedure is that non-agricultural property was also assessed. Hence the increased value of urban and industrial property is very evident. But most of Northumberland was concerned with purely agricultural enterprise and this perhaps justifies the production of Map 6:3 to give a generalised indication of relative change in rent levels. Figures for North Durham and Bedlington are not available.

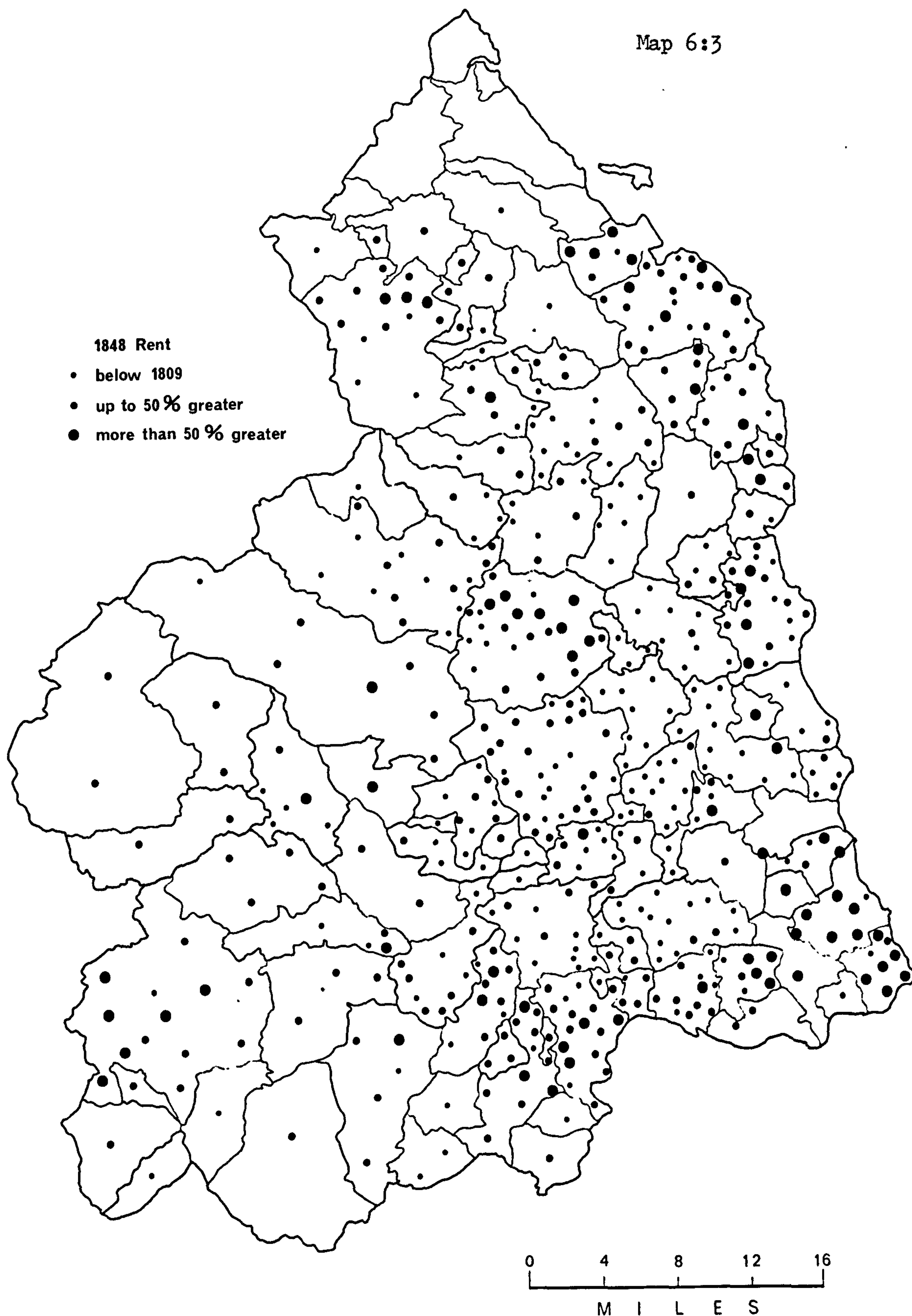
Map 6:3 indicates that greatest rent increases were in the industrial and mining area of the south-east, that part of the County where non-agricultural factors were most instrumental in influencing rent levels. Coal mining was also responsible for the increases in the Wylam and Mickley areas and in Haltwhistle, a woollen mill for that in Otterburn, iron works for the Bellingham rise and various urban activities for rent increases in Hexham and Morpeth. But agricultural areas of the

46 Leonce de Lavergne, *The Rural Economy of England, Scotland and Ireland*, 1855, p.273.

47 NCRO/ZMI/B45.

48 NCRO/QRP/89.

Map 6:3



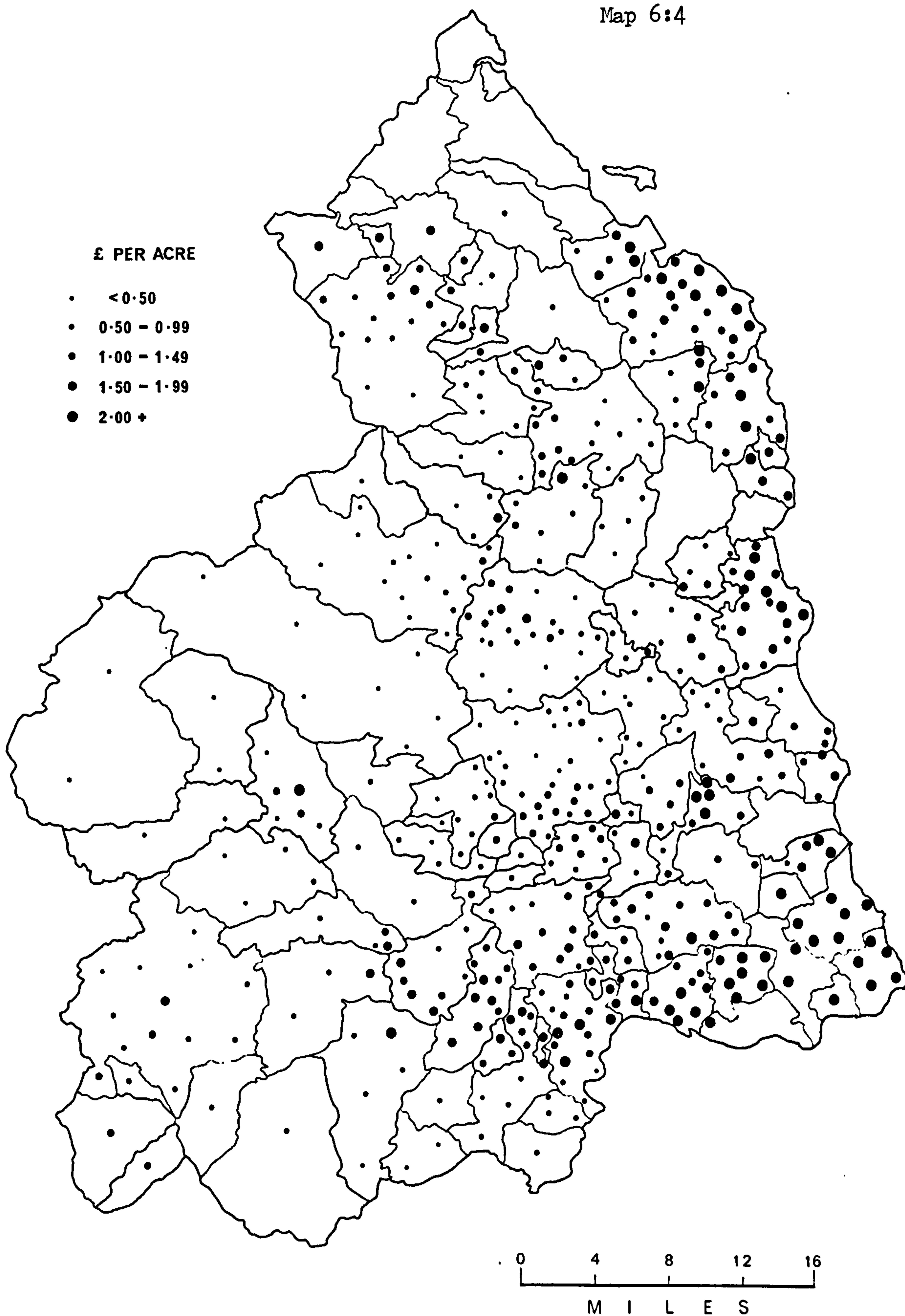
Rent Changes by Township between 1809 and 1848.

Sources: 1809 Extraordinary Gaol Rate Assessment,
NCRO/ZMI/B45.
1848 New Poor Rate Assessment,
NCRO/QRP/89.

County also show significant augmentation of rent. The Upper Coquet, parts of Glendale, the central Tyne area and most of the coastal belt show rent increases that were probably the result of increased agricultural productivity. The highest parts of the County, in the west and south, generally show moderate increases and these are also common in those parts of the north, coast and Tyneside not distinguished by still greater rises. Moderate increases are also common in central Northumberland, but more typical is rent decline. With the exception of the Upper Coquet, the area from Ponteland and Stamfordham in the south as far north as Eglingham, from Kirkwhelpington and Alwinton in the west as far east as Bothal and Alnwick or even the coast in places, was one in which rent reduction was more common than rent increase.

The situation is revealed more clearly by use of the 1848 Poor Rate Assessment to provide figures of rent per acre in the mid-19th century. These are shown on Map 6:4. Again, the non-agricultural rents of the south-east, Ovington, Bellingham, Hexham, Morpeth and parts of the Haltwhistle region distort the picture and should be discounted. What remains is a situation in which high rents per acre were being paid along the coast, in Glendale and the central Tyne area. Lowest rent per acre, not surprisingly, was paid for the highest parts of the County, in the south and west. Central Northumberland, that part which had been characterised by rent reduction in the period from 1809 to 1848, is now characterised by extremes. High rentals were paid in Glanton, Meldon or Whalton, for example, but low ones in adjoining areas. The course of the Wansbeck, the Coquet and even the upper reaches of the Aln and Breamish can be distinguished by the higher rents paid for the surrounding land. Between these areas are large regions of cheaper land, the cheapest of all occurring in Hartburn Parish. Yet Hartburn, on Map 6:3, is distinguished by moderate rent increases. The greatest decline occurred in those parts of central Northumberland paying a moderate rather than a

Map 6:4



Rent per Acre by Township, 1848.

Source: New Poor Rate Assessment of 1848,
NCRO/QRP/89.

very low or very high rent per acre. In short, the best land in Northumberland, the arable along the coast, on the Tyne and in Glendale paid the highest rent per acre and made the greatest rent increase during the first half of the 19th century. The cheapest land, that too high for extensive arable cultivation, made moderate additions to its rental. It was the land of central Northumberland, between about 300 and 700 feet above sea level and including a considerable proportion of thin, cold clay much of which could be put to arable use, land that came mid way on the scale of rent charge per acre that was most prone to rent decline in this period. Other evidence suggests that this part of the County was being forced to produce large oat acreages in the first half of the 19th century (see p.231) and that it was the last arable region to attempt to incorporate turnips into its rotations (see p.415). It would seem that much of central Northumberland was marginal arable land during the first half of the 19th century, that its arable potential produced higher rental than purely pastoral activity would have yielded and over-exploitation by arable cultivation caused the evident rent decline in the area.

The importance of geographic marginality has been emphasised before⁴⁹ and will be considered in more detail later (see pp.200-233)but, it may not be irrelevant to take note also of the importance of economic marginality. Arable exploitation of land that was geographically marginal often yielded returns to both tenant and landlord that were of marginal economic benefit. The comparatively high rents paid for such land could be sustained only as long as a considerable proportion of it remained in arable. But the longer the land remained in arable, the more prone it was to soil exhaustion, a situation aggravated by the fact that while few turnips were grown, less stock could be kept to make manure and while rents were high and prices low, less could be spent

49 e.g. J.W.House, 'Margins in Regional Geography - an Illustration from N.E. England', in Northern Geographical Essays, 1966, pp.139-56; M.L. Parry, Changes in the Upper Limit of Cultivation in S.E.Scotland 1600-1900, Ph.D.Thesis, Edinburgh University, 1973.

on imported manures and general improvement. 'High farming' may well have been uneconomic in the short term, but this was 'low farming' and perhaps uneconomic in the long term.

Cheap land was so largely because it could not be converted to arable use: expensive land was expensive usually because it was already good arable land. The first could best be rendered more productive and thus liable to higher rent by improved pastoral agriculture: the second by more efficient arable culture. But in between was land of middling price, the value of which could readily be raised by increasing its arable proportion, especially the ratio of grain to other produce. The conditions of the late 18th century, and more especially those of the Napoleonic Wars, were conducive to this happening in central Northumberland. Once it had, the spiral of 'low farming' took hold. High rents based on the arable farming of poor quality land were most easily maintained in the face of low prices and declining fertility by increasing grain acreage. This in turn reduced the capacity to maintain fertility and led inevitably to reduced yields or conversion to poor pasture, both of which must have meant diminished rental. The problem was whether it would have been more profitable for landlords to have allowed rent reductions and to have thereby made possible more pastoral farming, or to have tried to maintain high rents and thereby to have virtually compelled farmers to increase their arable acreage. Basically it was an economic problem in a geographic setting. As it happened, the pressure for farms - even poor ones - in Northumberland in the second half of the 19th century usually took the decision out of the landlord's hands and ensured him a high competitive rent which for marginal arable could only be paid by means of the most rigorous exploitation of the land. Geographic marginality decided where such exploitation would take place: economic marginality if it were to happen at all.

VII

AGRICULTURAL DEPRESSION

It has been argued - and it is an argument which appeals to common sense - that periods of agricultural depression, indicated by reductions in rents, increased arrears and abatements (see p.50) rather than simply by reduced prices for agricultural produce,¹ were detrimental to agricultural improvement in that agriculture then ceased to be a remunerative field for capital investment by either tenant or landlord. The comment of Adam Walker of Mellendean, Roxburgh in 1816 was typical of that school of thought. "It is difficult to describe the circumstances denoting the distress of farmers, which vary according to the nature of the farm; but among the most striking, is the total stop which has been put to improvement of land, by liming, draining, and every other operation requiring the expenditure of capital."² It was supposed that money was laid out on improvement in times of agricultural prosperity, particularly during the period when farmers were reaping the benefits of the high corn prices of the Napoleonic Wars. A letter to the local newspaper in 1822 expressed this view.

"It is well known that within the last 15 or 20 years, under the encouraging circumstances which were held out in the early part of the century, great tracts of inferior soil were enclosed and brought into cultivation, and a number of tenants were, by the fair prospects of the time, induced to expend their labour and capital in improving these lands, with the reasonable expectation that the latter years of their leases would repay their expenditure, and reward their exertions. The depression of produce has disappointed this hope, and when, in some cases, the leases have expired, and the lands have come into the market, the unfortunate improvers, whose thousands have been buried in the soil, have been over-

1 G.E.Mingay, 'The Agricultural Depression 1730-50', Ec. Hist. Rev., 2nd series, 8, 1956, p.324.

2 Evidence of Adam Walker of Mellendean, Roxburgh, Agricultural State of the Kingdom, 1816, pp. 407-8.

bidden and ousted by those whose sole view was to gather the fruits of their unfortunate predecessors' expenditure and labour."³

There is, however, an opposing view that is worthy of some consideration. It is that high prices and general prosperity do not necessarily stimulate increased activity, "because many producers are disposed to work less hard when an accustomed income can be earned with less exertion".⁴ For tenants, the means of making agricultural change were greatest during times of prosperity, but the actual incentive to change may well have been greatest during times of agricultural depression. For landlords, with greater reserves of capital, these conditions may not have been so strictly applicable, but again it may be wondered whether a landlord with capital would have been more eager to spend money on improving an estate that was already profitable than on one yielding only poor profits. Certainly the usual landlord reaction to times of prosperity, the raising of rents and the shortening of leases, was not conducive to tenants laying out their own capital. A Northumberland correspondent summed up the situation as he saw it in 1804.

"As farms in general are now let at rack-rent, and on short leases, it cannot excite surprise, that farmers should decline laying out their capitals in undertakings, from which time will not perhaps allow them to reap an adequate return... An acquaintance of mine has possessed a farm for about twenty years, consisting of nearly equal portions of good rich land and waste: and during all that time a single acre of the waste has not been improved. The reason is plain, - the proprietor will give no assistance; and the tenant, who finds he can live comfortably by the good

3 'A Northumberland Ploughman', N.C., May 11th 1822.

4 Sir Hubert Henderson 'The Price System', Economic Journal, Dec. 1948 quoted in G.R. Allen 'Wheat Farmers and Falling Prices', Farm Economist, 1954, 7, no.8, p.335. Allen's own studies of agriculture in Saskatchewan between 1914 and 1939 lend support to this argument.

land alone, will not embark single-handed in so arduous and hazardous an undertaking."⁵

It would seem that there is some danger in presuming that prosperity encouraged, and that depression deterred, agricultural improvement.

It is therefore worth examining in more detail the periods of agricultural depression in Northumberland in an attempt to discover whether the progress of agricultural development was markedly different during these periods than at other times.

Petitions complaining of the depressed state of agriculture in Northumberland were either sent or planned to be sent to Parliament in 1821,⁶ 1822,⁷ 1827,⁸ 1835,⁹ 1836,¹⁰ and 1850,¹¹ but it may well have been that the discontent they expressed was more political than agricultural. Perhaps a surer way to trace periods of agricultural depression is to find when there were uncustomarily large numbers of farms advertised to let in the newspapers. Bearing in mind that advertising steadily became an increasingly popular method of letting farms after 1750 and that isolated high figures for a single year, such as those at 21-year intervals produced by the block letting of Greenwich Hospital farms, are not significant, such a method can prove useful and was regarded by contemporaries as an indication of depression.¹² During

5 F.M., 5, 1804, p.450.

6 N.C., Jan. 27th 1821.

7 N.C., Feb. 16th 1822.

8 N.C., Jan. 27th 1827.

9 N.C., March 28th 1835.

10 N.C., Feb. 20th 1836

11 N.C., Jan. 4th 1850.

12 "The heart sickens at the perusal of the uncommonly numerous advertisements of the sale 'of the whole stock, implements of husbandry, etc.' of farmers who are already ruined, which crowd the columns of the newspapers." Berwickshire Quarterly Report, April 25th 1817, F.M., 18, 1817, p.228.

such times it was said that "the cause of farms letting so slowly is... the real want of tenants; this want is really owing to the many failures of Farmers",¹³ that "the number of farms to let in this County are great"¹⁴ or that "I was in hopes... that farms w^d have been eagerly enquired after, but I am afraid it will not be the Case".¹⁵ Newspaper advertising, at least in the 18th century, was more likely to have been a last resort than a first course of action, but it should provide some indication of which were years of depression.

Figure 7:1 plots the total number of individual farms advertised to be let each year. The block advertisements of the Greenwich Hospital, a product of landlord policy and nothing to do with depression, are distinguished. The evidence suggests periods of depression in 1762-65, 1780-84, 1805-06, 1808-12, 1816-18 and 1830-34 and perhaps also in the late 1840s. These periods generally coincide with low grain prices, often being immediately preceded by them (see pp.286,297,301). They are also frequently confirmed by evidence from estate papers, such as a letter from Joseph Hutchinson at Chillingham in 1762.

"Farmers are Breaking every Day as well as the Gentlemen of this Neighbourhood, and I am much affraid Ralph Ostens will not be able to stand it, for I can get nothing of him without Distress, and Hunters Wifes Fortune does not appear yet, and Morrison is Sixty Pounds behind, nor does Halls Rent come in a Bill from Newcastle as Promised, nor M^{rs} Dalgliesh, The Wooler Ten^{ts} Turvelaws the Way to Wooler nor Walkers arrear come till after the Fair or their Wool be Sold..."¹⁶

13 Joseph Oxley to Sir John Delaval, March 4th 1783. NCRO/2DE/4/15/17.

14 Joseph Oxley to Sir John Delaval, Nov. 26th 1783. NCRO/2DE/4/15/57.

15 J. Bailey to Sir J.B. Riddell, Nov. 16th 1818. NCRO/ZRW/293.

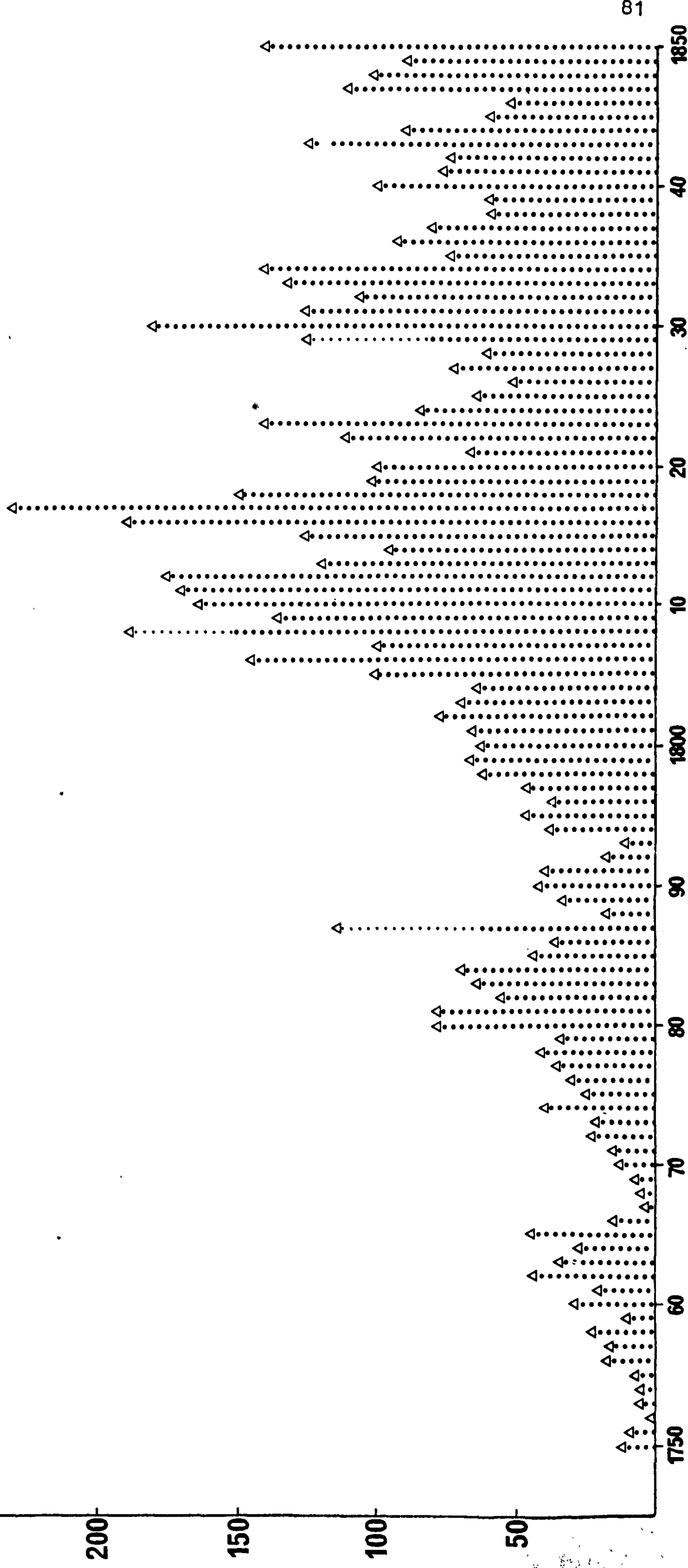
16. Joseph Hutchinson to Lord Tankerville, April 24th 1762. NCRO/Tankerville Box 1/D/2 unsorted.

FARMS

Figure 7:1

Number of Farms Advertised To Let In The Newcastle Courant, 1750-1850.

..... Greenwich Hospital Farms



Source: Newcastle Courant, 1750-1850.

The tenor of a letter in 1783 is similar. "It was positively Asserted by a reputable Farmer the other day that His Grace the D. of Northumberland had Disabled three Hundred Tenant in the space of the last six years. There is no age of man can till of so many farmers having been for ever ruined as has been in these last Seven or Eight years... from one end of the County to the other it is So."¹⁷

Apparently not even the frequent high corn prices of the Napoleonic Wars were enough to avert depression when rents were also high. The ruin of the tenant at Rosedean in 1809 "alarmed the other stock Tenants - he took this farm by proposal, at £2600 - he found he could not stand it, & wanted to give it up - Mr. Clennel reduced his rent £600 p ann^m & he is now gone to Pieces, The Landlord obliged to seize for his rent, & several Executions besides - they say the farm ought not to be beyond £1400 a year at the outside".¹⁸

The post-War depressions in Northumberland are sufficiently well chronicled in the official enquiries of the age,¹⁹ but one cannot help wondering how objective some of the witnesses were. Was it true in the Northumberland of 1816 that "more than 100 farms are unlet; and that the great body of farmers are in the utmost distress, verging upon bankruptcy,"²⁰ or that "were they not restrained by leases, the whole country would have given up their farms, for distress among farmers was never so great"?²¹ Perusal of strictly local material suggests it was not. A letter to the

17 Joseph Oxley to Sir John Delaval, March 4th 1783. NCRO/2DE/4/15/17.

18 The Duke of Northumberland's Commissioners, W^m Smith, D.W. Smith and J. Laws, to the Duke, Nov. 29th 1809. AC/Z/1/12b/517.

19 See particularly Agricultural State of the Kingdom, 1816, pp. 234-42; and Reports of the Select Committee on the State of Agriculture and the Causes of Distress, 1836, pp. 137-78.

20 Evidence of James Fenwick of Long Wilton (Witton) near Morpeth, Agricultural State of the Kingdom, 1816, pp. 235-6.

21 Evidence of George Hopper of Black Hedley, *ibid.*, p. 238.

Courant in 1822 flatly contradicted a very similar picture drawn earlier by 'A Northumberland Farmer'. "He tells us, that there are hundreds of farmers who stand equally in need of relief as himself. I will boldly tell him, that his assertion is not true. There may be individuals in such a situation; but, if any, I am well aware that they are very few. Bad as times are, they are not so bad as that."²² 'A Northumberland Farmer' later clarified his opinion and gave an interesting slant to the relation between depression and improvement. Depression, he said, had removed only the poorer, less skillful farmers; those who remained were the most competent and industrious.²³ Certainly the "phenomenon of a landlord undertaking improvements in the midst of the depression"²⁴ is evident enough. Rent abatements by Northumberland landlords frequently included the provision of new buildings, of lime or seed, or were made on the understanding that various improvements be undertaken by the tenant. The Greenwich Hospital, although exceptional in the amount of money it was spending on its estate after the War (see p.126) was typical in its attitude to depression.²⁵ The depression confused and worried tenants and there were reports of them "refusing to carry the Materials in consequence of the distressed state of the Times"²⁶ and of delay "owing to the late depressed state of Agriculture the Tenant being then undetermined whether he could continue the Farm at its present Rent or not",²⁷ but these were recognised as minor and temporary.

22 'An Old Farmer', N.C., June 22nd 1822.

23 'A Northumberland Farmer', N.C., June 29th 1822.

24 G.E. Mingay, op.cit., p.334.

25 See particularly comments on East Mill Hill and Haydon Town Farms, 1817 Visitation, PRO/ADM/79/59; and on Dilston Demesne, Throckley South and Newlands Morrow Field Farms, 1818 Visitation, NCRO/NRO/467/42/4.

26 1818 Report on Lipwoodwell and Lipwood Farm, Warden, NCRO/NRO/467/42/4.

27 1818 Report on West Land Ends Farm, Langley Barony, NCRO/NRO/467/42/4.

difficulties; the main work of improvement continued, if not stimulated by depression, at least unabated by it.

It was a common contemporary argument that the best way to avoid increased poor rates in times of depression was to employ those who would have been unemployed in the execution of agricultural improvements.²⁸ In Berwickshire, it was reported in 1819 that all labourers were fully employed in "draining and other kinds of work, which were in a great measure at a stand during the last two years",²⁹ and in Cumberland in 1823 that "In seasons of uncommon difficulty, such as the present, good roads upon a farm, and well drained land, commonly return extraordinary profits; and we would humbly recommend to landlords to give every encouragement to these two excellent modes of improving their rentals".³⁰ An article by one 'Gibbie Grubber' in 1823 identified a similar situation in the South of Scotland where one could usually find "inferior soils still in cultivation, and daily behold such soils, situated in the worst of climates, undergoing the process of improvement. It may require greater knowledge than we possess, to account for such policy on the part of farmers. But while we know that inferior soils continue to be improved,- that manure and lime are bought at most extravagant prices and applied to such soils, we shall smile at the political economist who raves about inferior soils going out of cultivation".³¹ An argument using similar logic was presented by the Yorkshire Land-Draining Association in 1844 that "the position of the Agricultural Community seems emphatically

28 See, for example, the report of this being done extensively in Northumberland in a letter from 'A Well-wisher to all Ranks of Society', N.C., Feb. 5th 1820.

29 Berwickshire Quarterly Report, F.M., 20, 1819, p.103.

30 Cumberland Quarterly Report, F.M., 24, 1823, p.506.

31 'Gibbie Grubber', 'On the Effects of a Low Price of Corn', F.M., 24, 1823, p.201.

to call for the most active promotion of every practical improvement, which, by securing an increase of production, may tend to counterbalance any depression consequent upon the relative reduction in prices."³²

It is as well to remember that the measurement of agricultural depression in terms of wheat prices does not necessarily give an accurate picture of agricultural prosperity in Northumberland, not primarily a wheat - or even a grain-producing county. Sir Charles Monck recognised in 1834 that the depression "was greater now than ever before in the article of wheat: But oats and barley he believed bore a remunerating price, and stock and wool were dear".³³ Nor should it be assumed that the conditions sometimes pertaining in the South of England - periodic rural under- or unemployment, high poor rates and labourers' riots - were equally typical of Northumberland. They were not. Agricultural labour was generally scarce and it always received wages amongst the highest in England (see p. 185). Poor rates were consequently low and caused little comment, and there were no violent disturbances amongst rural labourers.³⁴ This being so, it must be wondered how depressed Northumberland agriculture ever was, even during the worst periods of depression. Depression like improvement is, after all, a relative term. The simplest change in the most backward agriculture may have seemed a great improvement: the smallest reversal in the fortunes of prosperous farmers may have been regarded as depression.

The local newspapers have been used to give some idea of how many farmers were in really serious financial difficulties during one of the most serious of the depression phases - that following the Napoleonic Wars. A fair idea of the numbers and locations of those farmers who suffered desperately can be gained from the formal announcements of

32 N.C., Feb. 16th 1844.

33 Abstract of Sir Charles Monck's Rent Day Speech, Nov. 25th 1834, NCRO/ZMI/B41/7.

34 See the comments of 'A Well-Wisher to the County', N.C., May 18th, 1822.

bankruptcies, or from the factual addition to advertisements for the sale of farm stock that the sale was being brought about by bankruptcy, by the landlord distraining for rent or as a consequence of a writ of Fieri Facias delivered to the Sheriff. No doubt some farmers in equal difficulties were able to make quieter, less embarrassing exits from agriculture which would not be detectable, but it is significant that between 1816 and 1836 - the date of the last Report on agricultural distress - only 86 cases were found of farmers in such severe economic difficulties.

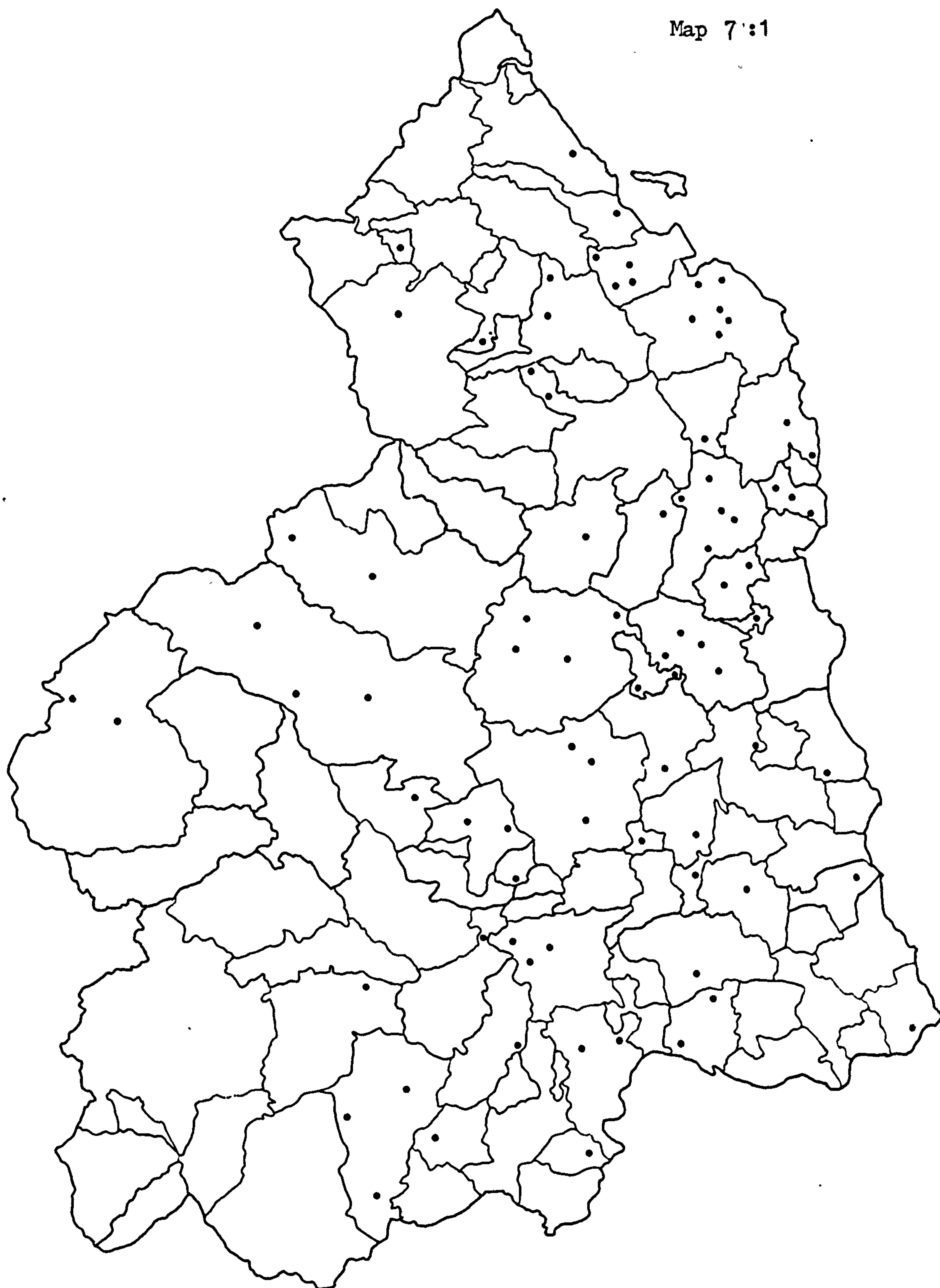
The distribution of these 86 cases is also interesting. Map 7:1 shows no tight grouping in areas of poorer soil or marginal land. Certainly the very north of the County, Glendale, most of Tindale and much of the higher lands are relatively unmarked, but the distribution is as dense on the fertile soils of Bamburgh and Belford as on the less desirable land around Kirkwhelpington or Whittingham. Nor is there really any time in which there was a glut of financial tragedies during this period. After a maximum of 13 in 1816, there were never more than 7 in any one year and most years had only 3 or 4.

The evacuation of a farm by a tenant, particularly when bankruptcy had caused this to be sudden and inconvenient, frequently occasioned the insertion of an advertisement in the papers for the letting of the farm. Of the 86 farms where the tenants were in serious difficulties, 49 could be definitely identified in letting advertisements. These fell into the following acreage categories:-

below	50 acres	-	2
	50 to 149	"	- 4
	150 to 299	"	-15
	300 to 499	"	-15
	500 to 999	"	- 8
	1000 and over		- 5

Even by Northumberland standards, these were not small farms. They certainly provide no evidence of the small men going to the wall. Of course, smaller farmers may have had less need of formal insolvency

Map 7:1



Insolvent Farmers, 1816-1836.

Source: Newcastle Courant, 1816-36.

proceedings, but there is ample evidence of bankrupt small shopkeepers, publicans and even farm labourers to suggest that had there been a great number of small farmers in financial difficulties, they too would have left some evidence. It would seem there were not and that what few embarrassed farmers there were in the County during this period farmed considerable holdings.

It must therefore be supposed either that periods of agricultural depression in Northumberland between 1750 and 1850 proved little obstacle to improvement and may even have stimulated it, or that the depression of these periods was generally too shallow and short-lived to have had any serious effect on improvement. Yet there is no reason why these should be mutually exclusive alternatives. The existing evidence points to the conclusion that Northumberland suffered no serious or long-lasting agricultural depression in the century after 1750 and that what difficulties there were certainly proved no real hindrance to improvement and innovation.

VIII

ESTATES

The tenant farmer owned only livestock, crop and implements: the soil and most of what was constructed upon it belonged to his landlord and could be used only as the landlord allowed or failed to forbid. Consequently, the landlord's behaviour in the administration of his estates was crucial,¹ particularly in the "land-owners' landscape"² of Northumberland. Very little of the County was farmed by men who actually owned their farms. The Land Tax Returns³ confirm this (see Table 8:1). What few owner-occupiers there were were basically the customary or copyhold tenants of the south-west of the County, small cottagers, or large landlords making payment for their seats.

Table 8:1

Relative Importance of Proprietors and Owner-Occupiers
in Northumberland

<u>Tax Assessed</u>	<u>Number of Proprietors</u>	<u>Number of Owner- Occupiers</u>	<u>Total Proprietors and Owner- Occupiers</u>	<u>% Owner- Occupiers of Total</u>
4/- to £1	909	366	1275	28.7
over £ 1 to £ 5	580	156	736	21.2
over £ 5 to £10	193	39	232	16.8
over £10 to £20	117	13	130	10.0
over £20	109	14	123	11.3
TOTAL	1908	588	2496	23.5

Source: 1806 Land Tax Returns.
NCRO/QRP/40-41.

1 G.E.Mingay, 'The Large Estate in 18th Century England' and F.M.L. Thompson, 'English Great Estates in the 19th Century' in Communications of the First International Conference of Economic History, Stockholm, 1960, pp.376-81,392-7; William Marshall, Landed Property, 1804, pp.28-9.

2 Thomas Sharp, Shell Guide to Northumberland, 1969, p.16.

3 It has been decided not to place great reliance on the distinction

Table 8:2 suggests that the domination of the landscape by large landlords did not alter radically during the period.

Table 8:2

Land Ownership in Northumberland, 1750 and 1873

	<u>10% of rental of Tankerville Estate</u>	<u>Number of estates equal to or above 10% Tankerville rent.</u>
c. 1750 ⁽¹⁾	£ 700	66
1873 ⁽²⁾	£3,142	61

Sources: (1) Mid-18th century undated list of rentals of main properties in Northumberland. AC/Middle Room/M/div.I/22.

(2) Return of Owners of Land 1873, London, 1875.

As the 1750 list gives no acreages, the rental of an estate which did not alter greatly in area during the period 1750-1873, that of Lord Tankerville, has been used as an index.

It is not possible to examine the style of management of all these estates. What must suffice is an examination of some of the chief characteristics of Northumberland estate management which draws evidence from a number of estates. It should then be possible to test such simplifications as that of Daniel Liddell, who claimed there were "two classes of landed proprietors in Northumberland. The landlords of the one class give leases, co-operate with farmers in draining and improving land... The

between proprietor and owner-occupier in the Land Tax Returns. For some parishes the distinction was never made, while in others it was made for only some entries. Northumberland leases usually left the landlord to pay the land tax, making it tempting for Commissioners to register the landlord as an owner-occupier. This happened in the parish of Whitfield, for example, in 1806 when the Blacketts paid a lump sum of £50.16.6 out of a total parish assessment of £56.16.0 and were recorded as the owners and only occupiers (NCRO/QRP/40-1), even though it is clear from estate rentals that their 12,000 acre estate in Whitfield was divided into many farms (NCRO/w/2/13). Hence Table 8:1 is likely to overstate the number of owner-occupiers and any attempt to trace a change in the ratio of proprietors to owner-occupiers is not likely to produce reliable results.

landed proprietors of the other class do not grant leases, or if they do, insert in the agreement absurd conditions which place tenants at their mercy [and] do not co-operate with their tenants in draining and improving the land... "4 This may best be done by investigating in much more detail the management of two extremely important and contrasting Northumberland estates in an attempt to discover what effect estate policies had on encouraging or discouraging agricultural improvement and innovation.

The effect of the landlord's agricultural enthusiasm.

Northumberland had no landlords in the mould of Thomas Coke or the Duke of Bedford, men who were personally and actively engaged in the improvement of agriculture on their own estates. The picture conjured up of a landlord such as Coke as the complete panacea for all agricultural backwardness⁵ has aroused some severe and well-founded criticism.⁶ Coke himself confirmed that his improvements had not spread at the rate of a mile a year.⁷ It is, perhaps, fatuous even to attempt to trace back the evolution of improved agricultural methods to the example of an individual. Primary historical evidence is not generally conducive to a study of the impact of even the greatest landlord's agricultural ideas on his tenants. Secondary evidence, where it exists, was generally created on the assumption or in support of the assumption that the landlord's personal ideas were effectively influential, and is therefore to be regarded with some suspicion.

4 N.C., March 22nd 1844.

5 Vide A.M. Stirling, *Coke of Norfolk and his Friends*, 1912; and N. Riches, *The Agricultural Revolution in Norfolk*, 1937.

6 R.A.C. Parker, 'Coke of Norfolk and the Agricultural Revolution', *Ec.H.R.*, 2nd series, 8, 1955, pp.156-66.

7 G.E. Fussell, 'The Dawn of High Farming in England', *A.H.*, 22 (2), April 1948, pp.83-95.

Some Northumberland landlords undoubtedly did try to use their influence and what they often assumed to be their superior agricultural knowledge to improve the techniques of their tenants. Correspondence between Sir John Delaval's land agents in Northumberland and Sir John in London provides some interesting evidence of patriarchial intervention. William Noble, the overseer at Hartley South and Brierton West farms, wrote to Sir John in December 1780 saying " ... have got the Meclean [presumably winnowing] and plow from Carlisle and does not in the least doubt but they will boath answer verey wel, the plow cost one pound nineteen shillings and sixpence, the Meclean three pounds seventeen shillings... "⁸ The new implements were not greeted enthusiastically by everyone. John Ocheltrie, the land agent at Seaton Sluice, reported to Sir John " ... there is a good Corn Machine at South Farm little worse than new; Yet Noble without consulting the Office, or Aquainting Any One with his Design, hath sent to no nearer a Market than Carlisle for a Plow and a Machine; not only buying the Same at a high Rate; but foolishly increasing the Price therof, by such a Long Carriage."⁹ Ocheltrie goes on to reveal where the incentive came from and is also surprisingly frank in his opinions about such innovations. "He says he had Lady Delaval's Order for so doing, which no doubt (if true) is a Sufficient Vindication of his Conduct. But if he had no such Order, then sure it must Appear both Unjust, & thoughtless to squander Money at this Juncture, in such an Unnecessary Manner."¹⁰ Clearly the implements were hardly likely to receive fair trial. Lady Delaval owned the Ford Estate of the Delaval Family and seems to have taken a keen theoretical interest in agriculture. John Bryers, the Seaton Delaval land agent, wrote to Sir John in March, 1783 saying, "I also rec^d two Books of Husbandry

8 William Noble to Sir John Delaval, Dec.24th 1780. NCRO/2DE/4/47/2.

9 John Ocheltrie to Sir John Delaval, Dec.29th 1780.NCRO/2DE/4/43/7.

10 Ibid.

(by Hart, and Hunter) with minutes by Lady Hussey Delaval for trials to be made of Sundry sorts of manure etc mentioned in them,"¹¹ and again in April, 1783 about a drill rake for the planting of peas, "as ordered by Lady Hussey Delaval to be made according to directions in Harts Essays on Husbandry."¹² Regretably, there is no information about the effect of Lady Delaval's advice on manure, but her horse rake was certainly not a complete success. Worked by an untrained horse and ploughman, on stiff clay, full of clods and formed into high and curving riggs, with teeth unable to penetrate the ground and followed by 10 or 12 women and children sowing the same quantity they would have sown broadcast, the rake does not seem to have made a totally favourable impression.¹³

Sir John, although he spent most of his time in London, was in a peculiarly favourable position to intervene in that boats from his bottle works at Hartley were constantly plying between Seaton Sluice and ports on the east coast, particularly London. Buck Wheat seed was sent from London to Berwick for use on the Ford farms in 1783,¹⁴ and several ploughs were sent from London for use on the Seaton Delaval estate.

"The two ploughs was received some time ago and has been tried. Matthew [the ploughman] says they will nether of them answer well for this strong Land - they can't get the smaller one to answer at all, he imagines the Beam has been made of Green wood, or otherwise has been twisted since it was made and stands quite from the Land. The larger one goes much better and I do not hear of any fault only its not effectually turning the furrows - this in some respects might be owing to their imperfect Idea of management of them, they being so much different from any thing of the kind used here."¹⁵ A double plough, tried the same

11 John Bryers to Sir John Delaval, March 14th 1783. NCRO/2DE/4/20/39.

12 Ibid., April 4th 1783. NCRO/2DE/4/20/42.

13 Ibid.

14 John Bryers to Sir John Delaval, April 27th 1783. NCRO/2DE/4/20/44.

15 Ibid., Feb. 14th 1783. NCRO/2DE/4/20/35.

month, similarly did "not meet with Matthews approbation".¹⁶

It is hard to imagine that imported implements, the result of landlord enthusiasm operating at a distance, made any real impression on the agriculture of the landlord's estates. Certainly one tenant on the Ford estate was "cutting down Ash and other Trees out of the Dean wood and making Carts and Ploughs and other implements of husbandry which are necessare for the stocking of a farm..."¹⁷ in 1794, presumably making his own implements in the traditional style, either totally oblivious of improved designs or all too aware of the opinions held of them by the various land agents and men like Matthew. But the letters of land agents to landlords are unlikely to yield hard evidence of any retrograde effect of landlord interference. Indeed, considering that the agent's job was at stake, even implied criticism of the landlord's interference is damning evidence of its general impracticality. Even apparently simple suggestions from above, evolved in theory in London, met equally simple practical objections in Northumberland.

"... I took one of the Gardeners Men (with one of their short Scythes that they use for the Garden walks) to make a Tryal of mowing stubble according to your Lordships directions in a letter for that purpose... The Clods of Earth and small stones in the Mausoleum field where the best stubble is, spoiled the Scythe's Edge and prevented its being gathered so well into heaps..."¹⁸

Similar encouragement from the landlord for tenants to use new machines seems to have existed on the Lord Crew Estate. An account book of about 1770 of John Sharp, Senior Trustee of the Crew Charity, notes "A Machine for cutting Turnips. A Machine of a new construction for chopping hay &

16 Joseph Oxley to Sir John Delaval, Feb. 22nd 1783. NCRO/2DE/4/15/3.

17 George Gladstone to Sir John Delaval, March 17th 1794. NCRO/2DE/4/49/1.

18 John Bryers to Sir John Delaval, Sept. 28th 1783. NCRO/2DE/4/20/66.

straw. N.B. These two are intended to be lent out to any persons that are willing to try them in order that the use of them may be publicly known in the country."¹⁹ There is no information as to the success of this particular encouragement.

The agricultural enthusiasm of landlords provided their agents with the incentive to experiment and to report on the experiments, but it would be unrealistic to assume that personal interest alone would have either countenanced major experiment or led to radical change throughout the estate. It seems much more probable that the benefits accruing from a landlord's personal intervention were a result of encouragement given to local agents to make better use of agricultural materials rather than of the application of theoretical knowledge devoid of practical understanding. Such a contribution is certainly less dramatic and is very much harder to trace, but a possible example of the process is detailed in a letter to Sir John Swinburne from his agent, William Kirsopp.

"I had Morrison's Son over at Capheaton when we View'd the Waggon fully and went afterwards and View'd Mr Delavals, which in my Opinion is as much too slender and light, as yours is too strong and heavy... I proposed to him to take yours to peices and putt her together again in a much lighter manner with a Sett of New Wheels also lighter to make her fit for 4 Horses to manage... Yours is Cledd in the Sides Double with whole Deal, and Mr Delavals is only Single and Slit Deal. Now I think Single with whole Deal would be a right Medium."²⁰

Hardly a sensational improvement, but one encouraged by the interest of the landlord and more likely to experience widespread if gradual diffusion than a strange plough, unworkable and exorbitantly expensive.

19 NCRO/b/164/5/92A.

20 William Kirsopp to Sir John Swinburne, Sept. 24th 1762. NCRO/ZSW/213/3.

There is little Northumberland evidence of the landlord's home farm being of more importance than as a source of fresh food for the household. The potential influence such farms might have had as practical examples to surrounding tenants of the latest agricultural techniques in actual operation, must have been largely nullified by the realization that the home farm "was not generally regarded as a business enterprise and when one was run at a profit for a few years it was worth writing a book on the case."²¹ Profit motivated the practical farmer to farm, increased profit to innovate: the certain proof that home farm methods were unprofitable could have been no motivation at all. When Sir Charles Monck put sand upon his own land at Belsay, it was an improvement in that it lightened heavy land, but as an example to tenants it was ineffectual as "the expence was still greater than the profit".²² The home farm at Howick was the product of the agricultural enthusiasm of the Greys and was, by 1851, extensively drained, subsoiled and manured, the corn was all drilled, the turnips moved by portable railway and the cattle box-fed, which even in Caird's estimation, were all "on a scale unnecessarily costly".²³ Hughes²⁴ has chosen to regard the considerable evidence from experimental agriculture on this farm as typical of the region: it is more realistic to see the project as completely atypical, a product of landlord enthusiasm, but in no way conducive to the diffusion of agricultural innovation.

Perhaps this failure of landlord enthusiasm to become infectious is best illustrated by an examination of Sir Charles Monck's estate at Belsay which, with its cold, stagnant clay, bare and dirty fallows, scanty and weedy crops of wheat and beans, and its absence of leases and drainage

21 F.M.L. Thompson, op.cit., p.392.

22 Thomas Colbeck's comments on Hugh Taylor's paper to Newcastle Farmers' Club. July 3rd 1847, L. & P. Bolbec N630.6/1.

23 The Times, Nov. 28th 1851.

24 Mark Hughes, Lead, Land and Coal as Sources of Landlord Income in Northumberland between 1700 and 1850, Ph.D.Thesis, Durham University, 1963.

was reckoned one of the worst-run in the County.²⁵ Yet Sir Charles was ostensibly one of the most enthusiastic of landlords. His rent day speeches are thick with paternal encouragement and agricultural advice. Monck had recommended the replacement of half the clover crop with a pea crop in 1835,²⁶ and continued to make the same recommendation nearly every year for more than a decade,²⁷ with the result that the tenants saw the opportunity to replace clover not with peas, but with oats, a practice only partially eradicated by the imposition of an arbitrary fine of £2 per acre for crops taken out of course after 1839,²⁸ Monck seems to have imagined himself as a sort of agricultural messiah amongst his tenants. "Go forward," he said, "cultivating my estate with increased skill and industry for the benefit of us both: Ask me for the use of any Knowledge, which I may possess beyond you, and you shall have it."²⁹ His knowledge came from "Conversation with gentlemen of most knowledge and experience in other parts of England, together with observation upon the practice of the tenants of an estate, which I have in a distant county [Caenby in Lincolnshire]".³⁰ Sir Charles also tried to stop his tenants sowing rye-grass with their clover - a rash move where clover was obviously prone to failure - to grow wheat after the lea though two crops of wheat on poor land in a four course rotation would hardly have been superior farming; and to grow more turnips, though he was reluctant to drain. "I have determined that all drainage at less than three feet is tenants drainage, and therefore do none."³¹ Not surprisingly, he had to admit in his inspection report of 1846 that

25 John Wilson, Northern Farms and Farming, 1864, p.3. NCRO/ZRW/Add.&Misc.

26 Rent Day Speech, Nov. 1835. NCRO/ZMI/B41/7.

27 NCRO/ZMI/S/12

28 Rent Day Speech, Nov, 25th 1839. NCRO/ZMI/B41/7.

29 Rent Day Speech, May 1844. NCRO/ZMI/B41/7

30 Rent Day Speech, Nov. 26th 1838. NCRO/ZMI/B41/7.

31 Estate Report, 1846. NCRO/ZMI/S/12.

"The tenants... give only a reluctant compliance",³² and in 1845 that he "feared they would, if permitted, relapse into the old way. The temptation of a small present benefit by cropping in false course, is too great to be resisted by such men".³³ Which was hardly surprising when they were all tenants at will of what appears to have been a remarkably conceited and stupid man. Personal enthusiasm did not necessarily mean that a landlord's ideas were good ones, nor did encouragement, even though it neared coercion, mean that new agricultural techniques diffused in this manner would in any way be permanent.

Landlord enthusiasm was also manifest in Mr Sitwell's Barmoor Castle Sheep Show, held annually from July 1804 for several years. The event was modelled on the Woburn shearing, even to the extent of building in imitation a hovel and a special house to hold 150 guests.³⁴ In that premiums were awarded to labourers winning drilling competitions and to owners of superior animals, the event differed little in function from the early agricultural societies and consequently suffered from the same weaknesses (see pp.487-95). Whatever beneficial effects the Show may have had in the display of new techniques were probably secondary to Sitwell's main interest - the display and letting of his own tups. It should not necessarily be assumed that the landlord loudest in his efforts to improve agriculture was the most effective (later evidence suggests that Sitwell's estate was very poorly run³⁵), that self-interest was not involved, nor that a venture in which "Noblemen, baronets, landlords, and tenants from both sides of the Tweed, sat intermixed like united Britons, discussing the advantages which must evidently result from gentlemen of landed property becoming

32 Ibid.

33 Estate Report, 1845. NCRO/ZMI/S/12.

34 John Carr to Sir John Delaval, July 21st 1806. NCRO/2DE/4/60/24.

35 W.H. Sitwell to Frank Sitwell, c.1840. NCRO/NRO/470/52-3.

the patrons of agricultural experiments; and many appropriate toasts were drank on the occasion,"³⁶ was of any practical use in promoting the diffusion of agricultural improvements.

Another way in which landlord enthusiasm could be directed towards the encouragement of agricultural endeavour amongst tenants was by the offering of premiums, restricted to tenants of the estate, for what the landlord deemed superior agriculture. Sir Henry Vane Tempest offered silver cups on his Durham estate for the farm in the best condition; for the most under-draining, hedging and laying down to grass; and for the best animals.³⁷ Sir James Graham adopted similar methods on his Netherby estate in Cumberland.³⁸ In Northumberland, the only evidence of the practice is for the tenants of the Greenwich Hospital estate in the southern part of the County, but the scheme barely lasted a year before being merged with the Tynside Agricultural Society's activities in 1844.³⁹ Presumably the effects of this sort of encouragement were not vastly different from the very similar encouragement offered by the agricultural societies.

Perhaps the most obvious method a landlord could use to re-educate his tenants in agricultural matters was that adopted by the Duke of Northumberland in 1843.

"A lecture on agriculture, which was numerously attended, was delivered by Professor Johnston, of Edinburgh, to the tenantry on the Duke of Northumberland's estate, on Saturday last, in his Grace's Lancastrian School Room, at Alnwick. The lecturer has been engaged at his Grace's expence; the tenantry being admitted gratis by ticket."⁴⁰

The first lecture was on draining, and others on various subjects followed.

36 N.C., July 14th 1804.

37 N.C., June 9th 1804

38 William Dickinson, 'The Farming of Cumberland', J.R.A.S.E., 13, 1852, p.252.

39 N.C., Sept.15th 1843.

40 N.C., Nov.24th 1843.

This hypocrisy on the part of the Third Duke, who had never encouraged draining or any other sort of improvement, must have struck the 'voluntary' audience of tenants at will more strongly than the theoretical arguments of Professor Johnston. An opinion of the venture attributed to one of these tenants was printed the following year.

"The Duke is rich, but very hard,
He wont return a cent;
But sends his tenants to the school
To learn to pay their rent."⁴¹

It would seem then that landlords motivated by their own zeal for agricultural improvement were in a peculiarly powerless position to exert their personal wishes upon their tenantry. They could bring pressure to bear, as Monck did, in the same ~~way~~ way that observance of game laws and voting traditions was maintained, but this hardly made for popular acceptance of innovations. A basic limitation to the effectiveness of the landlord's agricultural enthusiasm was his probable ignorance of practical difficulties as was the case with Delaval's efforts to innovate. But even more basic and marring all attempts of landlords to exert personal influence was the gulf that existed, not just between the landlord class and the tenant class, but between the amateur who dabbled in agriculture for pleasure or self-satisfaction, and the professional who depended upon agriculture for a livelihood and for whom indiscriminate change could mean ruin.

The land agent's role in improvement and innovation.

Bridging the gulf between amateur and professional, landlord and tenant, was the land agent. Sometimes called a commissioner, a bailiff, a steward or a receiver, it was the land agent's job to administer the estate in accordance with the wishes of the landlord. Whether this meant merely carrying out the detailed instructions of the landlord or

⁴¹ N.C., April 12th 1844.

virtually running the estate himself, depended very much on the landlord's inclinations and his agent's abilities, but if any individual was likely to stimulate agricultural improvement on an estate, it was not the landlord, but his agent.

Judging from newspaper advertisements both for and from land agents, the duties of such men could vary enormously. Some potential land agents thought themselves capable of keeping accounts, marketing all types of stock, of superintending labourers engaged in most activities from planting to brickmaking, of draining, embanking, surveying, caring for livestock and for the general management of all types of farms. The requirements of landlords were no less demanding. Presumably individuals who could really competently control all these activities single-handed were rare and this may be one reason why some landlords chose to appoint several men. It is interesting that an increasing number of candidates chose to sum up their capabilities by simply stating the region in which they had had experience. The long lists of the 18th century⁴² are less frequent in the early 19th than such recommendations as perfectly understanding the "Northumberland Agriculture",⁴³ or having been "brought up in the Agricultural Line in Scotland", and having served under "one of the first Agriculturists in Northumberland".⁴⁴ It would seem that general experience among progressive farmers was reckoned of more value than specific expertise in agricultural methods and that demand may have become greater for a single informed and enlightened administrator than for several competent technicians. It is, however, doubtful whether many land agents gained jobs as a result of advertising. There is little doubt that considerations other than agriculture were equally important. When a new bailiff was needed at Seaton Delaval,

42 e.g. N.C., April 29th 1775.

43 N.C., Jan. 26th 1811.

44 N.C., April 12th 1823.

Sir John was told, "His Name is Hedley, A near Friend of my Wife's, & He & his Connections several in Number, Voted always on Your Lordship's side in the County elections for Members of Parliament".⁴⁵

The duties of a land agent varied enormously. Those working for landlords who were frequently absent probably had more work and responsibility, as would those in complete rather than shared control. Sir Charles Monck was not a regular absentee and seems to have entrusted his new steward in 1850 with very little real power. It was his steward's job to let farms upon authorization from Sir Charles, to make general inspection annually accompanied by Sir Charles, to keep accounts to be explained monthly to Sir Charles and to see to the condition of fences and houses and the day-to-day running of the estate.⁴⁶ The opportunities such a man would have of making significant changes were clearly severely restricted. It was sometimes the case that land agents were needed as a result of agricultural change. When Lord Carlisle, who had previously administered his Northumberland estates with the aid of rent collectors and lawyers, introduced leases with agricultural covenants in 1740, it became necessary to employ a man on the spot who actually knew something about farming to make sure that the agricultural covenants were not broken.⁴⁷

Landlords varied a great deal in the use they made of their agents and the trust they bestowed in them. Policy on the Delaval estate seems to have been to appoint a multiplicity of agents, each acting as a check on the activities of the others - a stratagem used on other estates including the Duke's. Chaos and a great deal of ill feeling was often the result. In 1770, Matthew Hall was the farm bailiff of the Flodden

45 John Ocheltrie to Sir John Delaval, June 25th 1788. NCRO/2DE/4/43/41.

46 NCRO/ZMI/B12/22.

47 John Stoddart to Lord Carlisle, April 17th 1740. P. & D., Howard of Naworth, N52/51.

estate at Ford and Joseph Oxley the Chief Land Steward for the whole Ford estate and technically Hall's superior, though Hall reported directly to Lord Delaval. Oxley was in charge of hiring and paying servants, but they were employed by Hall. Oxley controlled the threshing and marketing of corn, but Hall was to make all decisions until the corn reached the barn.⁴⁸ With such overlapping duties, the men were bound to clash.

Oxley and Hall spent years trying to bring each other down and a letter from Sir John to Hall in 1774 shows Oxley to have nearly succeeded.

"I am sorry to hear you are undervalueing my farms at Flodden with an intent to prevent my getting such a rent for them as they ought to be let for. I was informed you said at Wooler market that you had told me they would be dear enough at the rent of £450 a year, and that you have had to discourage tenants who were desirous of taking them by saying they would require a greater sum to work is necessary and by other things which you have said."⁴⁹

But this sort of acrimony was not peculiar to these individuals. In 1763 Robert Burne - the general steward at Ford - complained to Sir John,

"... Matt Hall Will not take my advise in no one thing, but still Encourages the other Servants not to regard me in the least, Which Undoubtedly is a Very great step Why the people of ford take so much liberty of Using me so Very ill behind my back; When I told Hall My name Was by your Honours Order to be at all his accounts, he swore he had no such Order neitherrshou'd it Come in any such place, for I had no business With neither him nor his accounts, such behaviour you may be

48 NCRO/2DE/4/54/1.

49. Sir John Delaval to Matthew Hall, Jan.9th '1744'(1774);NCRO/2DE/4/54/8. See also NCRO/2DE/4/54/9.

sure rather daunted me for When such a lying fellow as him take the liberty of Using me ill, other people are likely to do it."⁵⁰

In 1783, John Ocheltrie, land agent at Seaton Sluice, brought more complaints. "It is disagreeable for me to be an Accuser of the Brethren. However my own Conscience, & the Integrity of my Heart, will not suffer me to see a Gentleman so shamefully imposed upon, without discovering the same, whether it be well or ill taken. What I mean is, that Mr Oxley never settles at home to do any Business..."⁵¹ And so the strife continued. In 1795, a new land agent reported, "If Lord Delaval would give me an order to Inspect his works hear, and ford, I would save Hundreds; If not, Thousands, in the Year, there is no body to touch to Lord Delavals, Interest, Can, a man serve too, masters, no, the agents, has so much themselves, both hear, & ford Castle, they have no time to Louke to Lord Delavals Interest which makes me very unesey to see all things Going to Confuchion - the souner the batter a man of Conchens is appointedl."⁵² Naturally, with so many competitors, there was a parallel struggle for comparable pay. "I understand that the salaries of Messrs. Bryers Broderick, & Forster, have been Augmented by your Lordship's generosity when here; But Am Sorry, that your Lordship in the Midst of your Usual Beneficence, forgot to think of Me."⁵³ It is quite obvious that the administration of the Delaval estates left much to be desired and the encouragement of progressive agricultural technique may not have been given the attention it deserved.

Not all estates were in such confusion. That of Lord Tankerville in the north was the second largest landed property in the County and

50 Robert Burne to Sir John Delaval, Aug.5th 1763. NCRO/2DE/4/52/6.

51 John Ocheltrie to Sir John Delaval, Jan.31st 1783.NCRO/2DE/4/43/15.

52 George Gladstone to Sir John Delaval,Nov,9th 1795.NCRO/2DE/4/49/15.

53 John Ocheltrie to Sir John Delaval,June 24th 1797.NCRO/2DE/4/43/55.

was effectively administered by a single man - Joseph Hutchinson from 1749 to 1783 and John Bailey from 1783 to 1819. In this case, relations were totally different. "It appears from letters I have perused that He [Hutchinson] and Mr Bailey who succeeded him as Agent were upon the most friendly terms and kept up such Correspondence both before and after his [Bailey's] appointment as convinces me that nothing relating the Estate or otherwise useful to his Lordship or Mr. Bailey was at all likely to be withheld by him."⁵⁴ Bailey's influence on the Tankerville estate can hardly be overestimated. "... what I place the greatest stress upon is the improvement of the estate by the new System of management I introduced, which is copying by the adjoining estates; and has been admitted by the Board of Agriculture as the best that has come to their knowledge, from the various county reports."⁵⁵ The chief factors differentiating the Tankerville administration from the Delaval were individual control with real power in the hands of the agent rather than multiple and limited control, and also total involvement of the agent in the affairs of the estate rather than in other affairs of his own.

It was most usual for landlords to intervene in their agents' administration only in matters of importance, particularly those directly concerning the rent. In 1850, Sir Walter Riddell complained to his land agent,

"... you propose the rents of my Moors are to be greatly reduced; when, as I am informed, the rent of Moors is generally well sustained; & such land, where it is pasture only, is much sought after. The alteration of the Corn laws cannot affect the moors & the price of Wool & of Sheep is far better than when Mr Orde's rent was reduced by your Brother from £225 to

54 William Metcalf to Lord Tankerville, Aug.11th 1824.NCRO/Tankerville Box 1/D/3 unsorted.

55 John Bailey to Lord Tankerville, Dec.26th 1797.NCRO/Tankerville Box 1/D/3 unsorted.

£190 - which rent you propose now to reduce to £135."⁵⁶

The reins were much tighter on the Delaval estate. When Sir John sent 60 quails in a basket by sea from London in 1783, despite the fact that they were starving and trampling each other to death, John Bryers felt the necessity of writing to London for permission to let them out.⁵⁷

A great deal that could not be settled by letter had to await the eventual arrival of Sir John "about the commencement of the partridge shooting"⁵⁸ before action could be taken.

Inefficiency and probably corruption seem to have existed among some land agents. The Barmoor Estate of Francis Sitwell was administered in the 1840s by a Mr Lowrey, whose activities did not meet with the approval of W.H. Sitwell, Francis' brother, to whom the estate would eventually descend. Lowrey had apparently already been dismissed as the tithe agent of a neighbouring landlord for fraud and stood accused of under-letting and of breaking the covenants of his own leases. Lowrey's advocacy of 21-year leases to Francis Sitwell had been successful, but the leases contained no improving clauses. The consequent poor farming from the tenants infuriated Francis' brother.

"On remarking on this negligence to Lowrey, he said oh! the best way is to get rid of a Tenant who wont attend to these points - Blockhead ! has he not given them leases without any Covenants on these points, so forsooth your lands are to be daily getting worse for 10 or 15 years because you are too lazy to look after the Tenants. A good Agent here sh^d be on some one part of the estate here every day in the year prying into all corners."⁵⁹

56 Sir Walter Riddell to George Tate, 1850. NCRO/ZRW/337.

57 John Bryers to Sir John Delaval, Sept.24th 1783.NCRO/2DE/4/20/65.

58 Ibid., Aug.27th 1796. NCRO/2DE/4/22/61.

59 W.H. Sitwell to Frank Sitwell. NCRO/NRO/470/52.

This was the crux of the matter. Whether Lowrey was actually dishonest is not possible to confirm considering that W.H. Sitwell was hardly a disinterested party, but it does seem that, in common with many other agents whose salaries as land agents were insufficient, Lowrey had other jobs and was by no means full-time steward on the Barmoor estate. W.H. Sitwell's summation of the evidence against Lowrey was that it showed "him either to be not quite competent or to be too absorbed by his farming or other Agency duties to attend to his situation here",⁶⁰ Clearly then, the role played by the land agent varied markedly from estate to estate and with it the capacity of the agent to act as an instigator or propagator of improvement.

Estate Policy: improvement programmes, methods of letting and attitude towards rent.

Whether the initiative for agricultural improvement upon an estate came from landlord or land agent, it manifested itself in estate policy. The effect of such policy on the tenants and the sort of agriculture they practised can perhaps best be seen in the attitude of the administration to improvement programmes, to letting and to rentals. Improvement programmes show with what effect the landlord and his agent could indulge in deliberate and all-embracing change completely organized from above; the attitude towards letting gives an indication of what care the landlord took when he selected tenants to work his farms; and a consideration of landlord attitude towards his tenants' rent should provide an idea of the relation between profit and improvement in the landlord's mind.

Sir John Delaval mounted what at first sight appears to have been an admirable improvement scheme on the Ford estates from the 1760s. Farms were taken in hand, they were surveyed and redivided, money was spent on them and after a few years they were returned to the market at

60 Ibid.

increased rentals. It would seem that an energetic landlord was at work, investing in agricultural improvement in the hope of eventual profit. This was certainly not the case. Farms upon the Delaval Estate were taken in hand when the land had been so impoverished by tenants renting from year to year that new tenants could not be found at the old rent.⁶¹ The landlord then moved in to improve the farm. An account survives entitled 'A Calculation of the improvable Lands in the Farms of Crookham & Heatherlaw', dated 1762,⁶² which concludes that by judicious management the annual improvement of about 300 acres will be £100. It is clear that agricultural improvement had a very restricted interpretation on the Delaval estates, particularly when the means of deriving the 'improvement' are considered. Seventy-eight acres of Crookham Moor were taken in hand in 1762 and were ploughed and limed. In 1763, they were sown with turnips and fed off, followed by oats in 1764, oats in 1765 and barley in 1766 before being laid down to clover and grass for hay. The land was then arable and would be required as such to entice a new tenant at an increased rent. The cost of the 'improvement' of 78 acres of Crookham Moor was, for liming, ploughing, sowing and harvesting £213 and for lost rent over four years £109.4s. The profit from the crops came to £460.18s. Hence, this small piece of 'improvement' had cost Lord Delaval nothing; indeed he had benefitted by £138.14s. and the prospect of increased rental. Crookham Westfield nearby seems to have once suffered from the same sort of treatment, rendering its 'improvement' in this manner no longer an economic proposition when Joseph Oxley reported in 1781 "... how unlikely is it to be an Advantagous Adventure to take Crookham Westfield on hand at the present Rents that are now bid when so much out of new land so Much

61 Robert Burne to Sir John Delaval, July 4th 1763. NCRO/2DE/4/52/11.

62 NCRO/2DE/19/4.

Impoverished and that which have be laid Down is doubly refined Poor."⁶³

The following year John Garrett confirmed that the farm needed real improvement.

"I think the Crookham Westfield Farm is capable of great improvement by a good course of Husbandry, and drawing Hedges where necessary; I think Lime would work wonders upon it, for it appears by its face to have got very little of that kind Manure."⁶⁴

A year later Oxley noted the poor condition of the farms that had been in hand. "I have made it an Observation for some time that all the Farms you for the most part have lately had on hand are such as the well skilled farmer would scarce bid for."⁶⁵ It would seem that great care must be taken when considering landlord improvement schemes, not automatically to assume that the landlord was willing to suffer financial loss for eventual profit and the long-term benefit of both tenant and estate. In this case at least, the landlord was impoverishing the land in a way that no tenant would have been allowed to do, for the sake of profit of any kind.

A more purposeful scheme of agricultural improvement was undertaken by Sir Edward Swinburne on his Highland Estate on the North Tyne. The situation is high and bleak and the soil, with the exception of small patches of alluvium by the River Tyne, generally poor and acidic. It was largely the area nearest the river, the "In Grounds at Mounces Know and Leaplish", consisting of about 460 acres,⁶⁶ which was subjected to extensive and very expensive improvements between 1763 and 1787. Parts of this area, though not always the same parts, were kept in hand during

63 Joseph Oxley to Sir John Delaval, May 6th 1781. NCRO/2DE/4/13/42.

64 John Garrett to Sir John Delaval, March 20th 1782. NCRO/2DE/4/61/6.

65 Joseph Oxley to Sir John Delaval, Feb. 23rd 1783. NCRO/2DE/4/15/14.

66 N.C., July 22nd 1809.

this period while improvements were executed. Dykes were constructed and stake and rice^{*} fences upon them while other areas were enclosed by stone walls. The enclosures were pared and burned, limed, stones picked from them, drained and either planted or cultivated.⁶⁷ New buildings were later constructed at the Mounces farm-stead. All this was done at the total expense of the landlord between November 1769 and May 1787.⁶⁸ Expenditure between 1763 and 1769 was probably not great as none of the area was in hand until 1769.⁶⁹ Nor did expenditure rise much until Sir Edward managed to pass a private Act through Parliament in 1774 allowing him to charge his improvements to his entailed estates.⁷⁰ John Leadbitter, the surveyor, supposed the parliamentary negotiations in 1774 had cost Sir Edward £448.0.7d. - probably about a third of what he had spent on the Mounces improvements to that date.⁷¹ It can therefore be assumed that being able to charge the improvements to the estate was certainly to Sir Edward's advantage and it may be wondered how much subsequent improvement would have been executed had he not been able to do this. Expenditure on the venture certainly rose dramatically from 1774 (see Table 8:3). Between November 1769 and May 1787, Sir Edward spent £6081 on his Highland Estate and reaped £3793 in return, the profits from farming areas held in hand, most of this sum accruing in the last two or three years.⁷² It may well be significant that when Sir Edward died, on November 2nd 1786, his son, Sir John, decided that improvement had gone far enough, rapidly concluded the programme, and let the whole Mounces area from May 12th 1787.

67 NCRO/ZSW/270-92.

68 Ibid.

69 NCRO/ZSW/221.

70 NCRO/QRUP/1 and NCRO/NRO/404/289/2.

71 NCRO/QRUP/1/2.

72 NCRO/ZSW/270-92.

* Temporary fence of wood & hawthorn erected while young hedge was growing.

Table 8:3Cost of Improving the Mounces Estate

	<u>Cr.</u>	<u>Dr.</u>
Nov, 1769 to May 1770	0	£ 77. 6. 0.
May 1770 to Nov.1770	0	£ 141. 4. 5 $\frac{1}{2}$
Nov. 1770 to May 1771	£ 29. 7. 6	£ 115.16. 4
May 1771 to Nov.1771	£ 2.11. 0	£ 114.11.11
Nov. 1771 to May 1772	£ 128. 3. 4 $\frac{1}{2}$	£ 169. 1. 7
Nov. 1772 to Dec.1773	£ 61.17. 6	£ 227. 4.11
Dec. 1773 to Dec.1774	£ 91.10. 9	£ 462.17. 1 $\frac{1}{2}$
Dec. 1774 to Dec.1775	£ 113.11. 2	£ 323. 2. 6
Dec. 1775 to Dec.1776	£ 64.19. 3	£ 228.19.11
Dec. 1776 to Dec.1777	£ 54. 7. 4 $\frac{1}{2}$	£ 332.18. 0 $\frac{1}{4}$
Dec. 1777 to Dec.1778	£ 267.16.10	£ 441.11. 7
Dec. 1778 to Dec.1779	£ 108.12.10	£ 352.19. 3 $\frac{1}{2}$
Dec. 1779 to Dec.1780	£ 213. 9. 9 $\frac{1}{4}$	£ 442. 9. 2 $\frac{3}{4}$
Dec. 1780 to Dec.1781	£ 229.16. 7	£ 345.19. 1
Dec. 1781 to Dec.1782	£ 241.18. 7 $\frac{1}{2}$	£ 278.13. 4 $\frac{1}{2}$
Dec. 1782 to Dec.1783	£ 246.17. 6	£ 418.19.11 $\frac{3}{4}$
Dec. 1783 to Dec.1784	£ 375.19. 9 $\frac{3}{4}$	£ 519. 6. 4 $\frac{1}{2}$
Dec. 1784 to Dec.1785	£ 468. 1. 4 $\frac{1}{2}$	£ 441.11. 1
Dec. 1785 to May 1787	£1094. 6. 5 $\frac{3}{4}$	£ 646.15. 1
TOTAL	£3793. 7. 8 $\frac{3}{4}$	£6081. 7.10 $\frac{1}{4}$

(The Dr. Account presumably includes rental lost while various areas of Mounces were in hand.)

Therefore cost of improving Mounces £2288. 0. 1 $\frac{1}{2}$

Source: NCRO/ZSW/270-292.

It is difficult to gauge how successful or profitable these improvements were. It was probably always the intention of Sir Edward to divide the improved area among the 5 or 6 large stock farms on the Highland Estate so that each had a portion of reasonable arable land. This was certainly the declared intention in 1809,⁷³ and at least one part of Mounces which had already been improved was let with a stock

⁷³ N.C., July 22nd 1809.

farm in 1778. Consequently, Mounces did not have a separate identity that would be identifiable on rentals - from 1763 parts were either in hand or let with various stock farms, which themselves rarely maintained a constant identity. It is therefore necessary to examine the rental of the whole Highland Estate of some 13,714 acres⁷⁴ for this period. Table 8:4 shows the changes in rental for the Estate and reveals that the Estate rental doubled during the period.

Table 8:4

Increase of Rent on Swinburne Highland Estate

Estate consisting of Longhouse, Willowbog, Leplish, Mounces Know Otterstone Lee and Neat and Akenshaw Burns.

	<u>Annual Rent</u>	<u>Comments</u>
1763	£211.15. 0.	Let as 6 farms, Mounces £26.10.0.
1764	£240. 0. 0.	Let as 5 farms, Leplish joined with Otterstone Lee, Mounces £26.10. 0.
1765	do.	do.
1766	do.	do.
1767	do.	do.
1768	£236.10. 0.	Mounces still £26.10. 0.
1769	do.	do.
1770	do.	do.
1771	£268. 0. 0.	Mounces taken in hand with part of Leplish.
1772	do.	do.
1773	do.	do.
1774	do.	do.
1775	£301. 0. 0.	do.
1776	do.	do.
1777	do.	Part of Otterstone Lee also taken in hand.
1778	£353. 0. 0.	Parts of Mounces, Otterstone Lee and Leplish still in hand. Part of Mounces let for £22.10. 0.
1779	do.	do.
1780	do.	do.
1781	do.	do.
1782	do.	do.
1783	do.	do.
1784	do.	do.
1785	do.	A part of Otterstone Lee and part of Mounces in hand.
1786	do.	do.
1787	do.	do.
1788	£435. 0. 0.	All let as 6 farms, but much re-arranged.

Source: NCRO/ZSW/219.

Between 1769, when intensive improvement began, and 1788, when the improvements were complete and the Estate once again all let, annual rent rose from £236.10. 0. to £435. 0. 0, an increase of about 84%. On the neighbouring estate, belonging to the Duke of Northumberland and containing very similar land but totally unchanged by landlord improvement, rents rose from £928. 6. 3. to £1517.13. 7, an increase of 63% during the same period.⁷⁵ It may therefore not be too far fetched to say that such land would have increased in value to the landlord by something in the region of 63% anyway and that Swinburne's expenditure of £2288 produced an increased rental of only 21% or about £50 per annum - an eventual yield of 2.2 per cent per annum after twenty years of investment. Obviously the Delaval type of improvement scheme was vastly more attractive and it is significant that Sir Edward's son, John, limited his expenditure in the area to the building of bridges and roads useful for the profitable carriage of coal into Scotland.⁷⁶ It is very doubtful whether the practical landlord could have afforded to personally finance such comprehensive and unremunerative agricultural improvement. and whether Sir Edward would have tackled the development in so complete a manner had he been able to spend the money in any other way.

Although some attention has been given to the subject of farm rents (see pp. 50-76), it will not be out of place to consider the attitude of Northumberland landlords towards rent. Rent represented the return on the landlord's capital and on any improvements that might have been made; it embodied his profit and largely controlled his standard of living. Of all estate matters, rent was of most importance to the landlord and if improvements could affect the amount of rent, then they too were important. Landlord attitude towards rent becomes

75 AC/Middle Room/B/1.

76 John Swinburne to John Hodgson, 1838 in Northumberland County History, 1940, 15, p.268; Simonburn Guard Book, NCRO/M15/A17.

even more relevant in the light of the popular contemporary argument that rent levels did much to regulate agricultural improvement and innovation. When John Wilson of Middleton in Teesdale died in 1770, he was described as "a good landlord to his tenants; he never was known to raise a tenant's rent in his life, and died with an unblemished character".⁷⁷ This conduct would not have met with the approval of Arthur Young.

"I have not seen an instance of rent being low, and husbandry, at the same time, being good. Innumerable are the instances of farmers living miserably, and even breaking, on farms at very low rents, being succeeded by others, on the same land, at very high rents, who made fortunes. Throughout my journey I have universally observed that such farms as were the most wretchedly managed, were very much underlet."⁷⁸

Nor did M^cCulloch agree somewhat later that low rents were good for the tenant.

"Estates that are underrented are, uniformly almost, farmed in a very inferior style to those that are let at their fair value; and the tenants are comparatively poor. An increase of rent, provided it be not pushed too far, is of all others the most efficient means of improvement."⁷⁹

In theory, the argument makes some sense in that the tenant on a very low rent would perhaps lack incentive to improve, but it is difficult to discern at what time and place a rent was low and virtually impossible to relate this with any accuracy to agricultural improvement. It has been argued that relative increase in rental can be an indicator of improvement (see pp.51-2), but it cannot be proved to have been a cause of it. What evidence there is of causation is limited to odd comments

77 N.C., June 16th 1770.

78 Arthur Young, Northern Tour, 1770, 4, p.376; Arthur Young, Political Arithmetic, 1774, p.275.

79 J.C.M^cCulloch, Statistical Account of the British Empire, 1837, 1, p.533. See also W.Davies, General View of the Agriculture of South Wales, 1815, 1, p.165.

in estate correspondence, such as that of W.H. Sitwell concerning the Yeavinger farm on the Barmoor estate in 1850. "No farm can well exhibit more the bad effects of a low rent compared with the reasonable capabilities of the soils, wh: has permitted the Tenant to sloven over everything, scratching only the surface, and leaving every portion uncalled upon and unimproved..."⁸⁰ Beyond this the argument cannot proceed.

A similar point over which tenants and theorists not surprisingly differed was the matter of rent abatements. When tenants could not pay their rent, the landlord was at liberty to take legal measures against his tenant. Apart from the ill-feeling and expense this was likely to engender, other difficulties arose as on the Swinburne estate in 1762 where there was "no ventureing to Seize any Body's Goods at this time till Winter be over for no person will take Leau Goods of ones hand at any rate",⁸¹ or on the Tankerville estate in 1777 where there was "£900 in arrear not to be avoided, but by Disputes, and raising a Clammor in the Country w^{ch} when done will sink many other spirits & I fear give a great turn to the prices & Letting Land".⁸² Some landlords showed remarkable leniency towards their tenants. A tenant of Sir J.B. Riddell wrote in 1819, "We never had any particular time of paying our Rents; times lately being much against Farmers Sir John always took them by Installments as we could advance them".⁸³ Obviously such a policy was not likely to have been general: most landlords wanted rent paid fully and punctually. But when times grew harder, particularly after the Napoleonic Wars, when many tenants could not pay their rents in full, the landlord was faced with the choice of distraining and re-letting, perhaps

80 Notes by W.H. Sitwell, c.1850. NCRO/NRO/470/52.

81 William Kirsopp to Sir John Swinburne, Sept.24th 1762.NCRO/ZSW/213/3.

82 Joseph Hutchinson to Lord Tankerville, Nov.26th 1777.NCRO/Tankerville Box 1/D/2 unsorted.

83 William Wilson to Oddie & Forster, Oct.27th 1819.NCRO/ZRW/286.

to worse tenants and probably at reduced rents, of revaluing the estate or of offering abatements. The last, in that it suggested only a temporary drop in income, was by far the most popular (see p.66) though permanent reductions often had to follow. Tenants also welcomed abatements in that they meant some temporary relief during particularly difficult times,⁸⁴ and superficially at least they would seem to have been a desirable emergency measure. It would seem though that they may have been a significant deterrant to agricultural improvement.

Rent abatement was often a device employed by landlords to raise ready money,⁸⁵ by generally insisting that the abatement was only for those tenants who had paid^{id} all their arrears. Consequently it was worth the tenants while to borrow money, and sink himself further into debt to qualify for the abatement.⁸⁶ Abatements also led to inflated rents offered by tenants depending on not having to pay the full rent; and artificially high nominal rents meant that there was no automatic filter to sift the good tenant who could make a farm pay and was not at the mercy of his landlord's bounty, from the poor tenant who farmed badly and whose rent had to be abated.⁸⁷ As a short-term measure, abatements were obviously a convenience to both landlord and tenant. Where they continued for many years, as they certainly did on some estates, they must have been a considerable hindrance to agricultural

84 Vide 'A Northumberland Ploughman', N.C., June 2nd 1821; "The Complaints of the Tenants are very great, and many of them would have given up their farms but M^r Kell & I Promising to represent their distress to you and M^r Trevellyan, from whom they hope for some relief against next Rentday... Several Landlords in Northumberland have made returns to their Tenants from 10 to 20 Per Cent I have received Instructions from M^r Silvertop to return from 10 to 20 Per Cent to his Tenants at the approaching Rent day." William Todd to Henry Witham, Nov.24th 1815, NCRO/ZCO/9/1.

85 1822 Greenwich Hospital Report, PRO/ADM/79/60.

86 'A Tyneside Farmer', N.C., April 20th 1822.

87 John Grey to Tyneside Agricultural Society, N.C., Jan.11th 1850.

improvement. On the Swinburne estates, for example, they were offered in 1829, 1830, 1843, 1844 and 1850, despite frequent rent reductions, and on the Craster estate in 1830, 1831, 1833, 1834, 1835 and 1836.⁸⁸

Another method used by landlords to adapt rental to adverse agricultural conditions was the corn rent. The Duke of Portland introduced the system to the County in 1815 whereby the whole of his reduced rental was regulated by the prevailing Newcastle price of wheat.⁸⁹ Scales were adjusted as in 1829, 1832 and 1846,⁹⁰ but the system did not obviate the need for reductions in the nominal rent.⁹¹ No other instance of corn rent has been found in the County though it was frequently discussed by landlords and tenants⁹² and was considered on the Sitwell estate in 1850.⁹³ Various other schemes were mooted for using the prices of all cereals or the tithe averages to regulate part of the rent, but none overcame the preference of both landlord and tenant for a fixed rent, nor could they be expected to be particularly appropriate to the stock farmer.⁹⁴ In that all such methods of rent regulation produced "a disregard to the state of the markets, the fluctuation of which is the great impulse to industry and skill",⁹⁵ they must be regarded as disadvantageous to the progress of agriculture.

Although the discussion of the importance of leases to agricultural improvement is properly reserved for another section, the consideration of how farms were let is more relevant to the connection between estate policy and that improvement. The way in which a farm was let could bear

88 Editions of Newcastle Courant.

89 NCRO/ZRW/289 and N.C., Dec. 2nd 1815.

90 NCRO/ZSA/12/16.

91 John Bailey to Sir J.B. Riddell, Nov.16th 1818.NCRO/ZRW/293.

92 e.g. Thomas Rodger to William Lowry, March 3rd 1852.NCRO/Tankerville Box 1/D/3.

93 W.H. Sitwell to Frank Sitwell, Jan.10th 1850. NCRO/NRO/470/52.

94 NCRO/ZHE/34.

95 1822 Greenwich Hospital Visitation, PRO/ADM/79/60.

heavily on whether that farm was likely to improve and on whether its tenant was likely to innovate. On the more paternal estates, particularly that of the Duke of Northumberland, there was a marked tendency to let to the heir of the previous tenant (see p. 136) whatever his agricultural qualifications. There was similar absence of control over the quality of tenant when the lease of a farm was publicly auctioned, though this was a rare occurrence.⁹⁶ Estate correspondence makes it clear that it was far more usual for the land agent to enquire quietly and privately some time before a farm was due to be re-let. Very often existing tenants would continue, though perhaps on new terms, or the farm would be let to someone known personally by or recommended to the agent. When such methods failed, the farm would of necessity be advertised in the newspapers.⁹⁷ Although farms were advertised throughout the second half of the 18th century, the method became very much more popular in the 19th and as long as it was used to attract a wider choice of tenant, it was presumably beneficial to agriculture. But the system could be, and was, abused.

A meeting of the Northumberland Agricultural Society in 1845 heard that "If the landlords did advertise their farms, and put the tenants in competition with each other, they must not take the highest bidder always; but they must take the most substantial farmer - the man who was possessed of capital, and who had spirit to lay that capital out."⁹⁸ Many landlords were naturally tempted to accept the highest offer whoever made it. The system was generally known as 'letting by proposal' and was attended with great secrecy. Examples of typical wording in advertisements are, "Proposals, sealed up, with the word Proposal written on the outside",⁹⁹ "Proposals, sealed up,... mentioning Proposal upon

96 This happened in 1806 when the Earl of Carlisle let a 448 acre farm in Thirlwall. P.& D., Howard of Naworth, N49/56.

97 When John Bailey was offered no more than £1800 for a farm at Doddington which he had valued at £2100 p.a., he wrote to Lord Tankerville, "The Rent he offers being so much below my estimate, I have advertised it." Nov. 29th 1802, NCRO/Tankerville Box 1/D/3 unsorted.

98 Philip Nairn, N.C., Oct. 10th 1845.

99 N.C., Aug. 1st 1807.

the Direction",¹⁰⁰ or "Offers will be taken in until the 1st December next, and none after. Such as are not accepted will be kept secret".¹⁰¹ Great distinction was made between those farms which were to be let by proposal, and those which were to be treated for.¹⁰² Blame for the introduction of such a system to Northumberland was generally attributed to the example set by the Greenwich Hospital in their administration of public lands¹⁰³ (see pp. 131-2), though it would clearly have initiated itself, particularly when there was special doubt as to the market value of a farm. The Duke of Northumberland's Commissioners, for example, were thinking along these lines in 1798 for farms nearest the larger towns.¹⁰⁴

There was great criticism of the proposal system. A letter from 'Agricola Northumbriensis' in 1806 stated that, "Most of our landholders now let their farms by written proposals; a method which, I think will in the end, prove ruinous to the tenantry, and consequently highly injurious to the landlords and the country".¹⁰⁵ Certainly contemporary opinion interpreted much tenant failure to be the result of proposals. In 1810, it was said that "The farmers who took land by proposal, two or three years since, are all sick of their bargains. Many have given up".¹⁰⁶ In 1848, W. Stephenson saw "land let by proposal as tenanted by the poorest class of farmers, and invariably worst managed".¹⁰⁷ But by this time, the system was probably much less indiscriminate and, therefore, less harmful to agriculture. By the 1830s; not only were

100 N.C., Aug.17th 1805

101 N.C., Oct.29th 1803

102 Stelling and Broomy Hall, near Bywell, N.C., Dec.21st 1816..

103 Vide Thomas Bell, History of Improved Short-Horn Cattle, 1871,p.116.

104 James Dormer and Robert Forster to Duke of Northumberland, April 7th 1798. AC/Middle Room/Letter Book 1796-1800/p.74.

105 A.M., 1806. Letter from 'Agricola Northumbriensis'.

106 F.M., 2, 1810, p.412.

107 W. Stephenson to Newcastle Farmers' Club, N.C., Jan.14th 1808.
See also N.C., June 9th 1848.

advertisements offering farms to be let by proposal somewhat less common (see Figure 8:1), but many demanding proposals carried such riders as, "The Proprietor does not bind himself to accept the highest Proposal".¹⁰⁸ Upon those estates where the proposal system was rigorously employed, it seems likely that agricultural improvement would have progressed more slowly than if a more selective system of letting had been used. It is scarcely feasible to test this thesis or the several others concerning the effect on agricultural improvement of landlord policy, by an examination of every Northumberland estate, but by studying two large and contrasting estates in which many of these features were prominent, it is hoped to reveal the importance of these aspects of landlord policy to agricultural improvement and innovation.

The Greenwich Hospital Estate.

The Greenwich Hospital Estate had originally belonged to the Third Earl of Derwentwater but had been forfeited to the Crown when he was beheaded for his Jacobite affiliations in 1715. Repurchase was rendered unlikely when his heir died under age and unmarried in 1731 and the Estate was eventually granted to Greenwich Hospital by an Act of 1734.¹⁰⁹ It comprised about 35,000 acres, mainly in the south and south-west parts of the County, though scattered farms were owned in Bamburgh, Meldon and Ilderton. Though the Estate was the property of a public body rather than a private landlord, there was little difference in the priorities of administration. The Hospital still felt it held an estate in trust for posterity, it suffered the disadvantages of any other large, generally absentee landlord and it was encumbered with the same sort of financial responsibilities towards a landed property.¹¹⁰ Until 1833 the Estate

108 N.C., Nov.28th 1835.

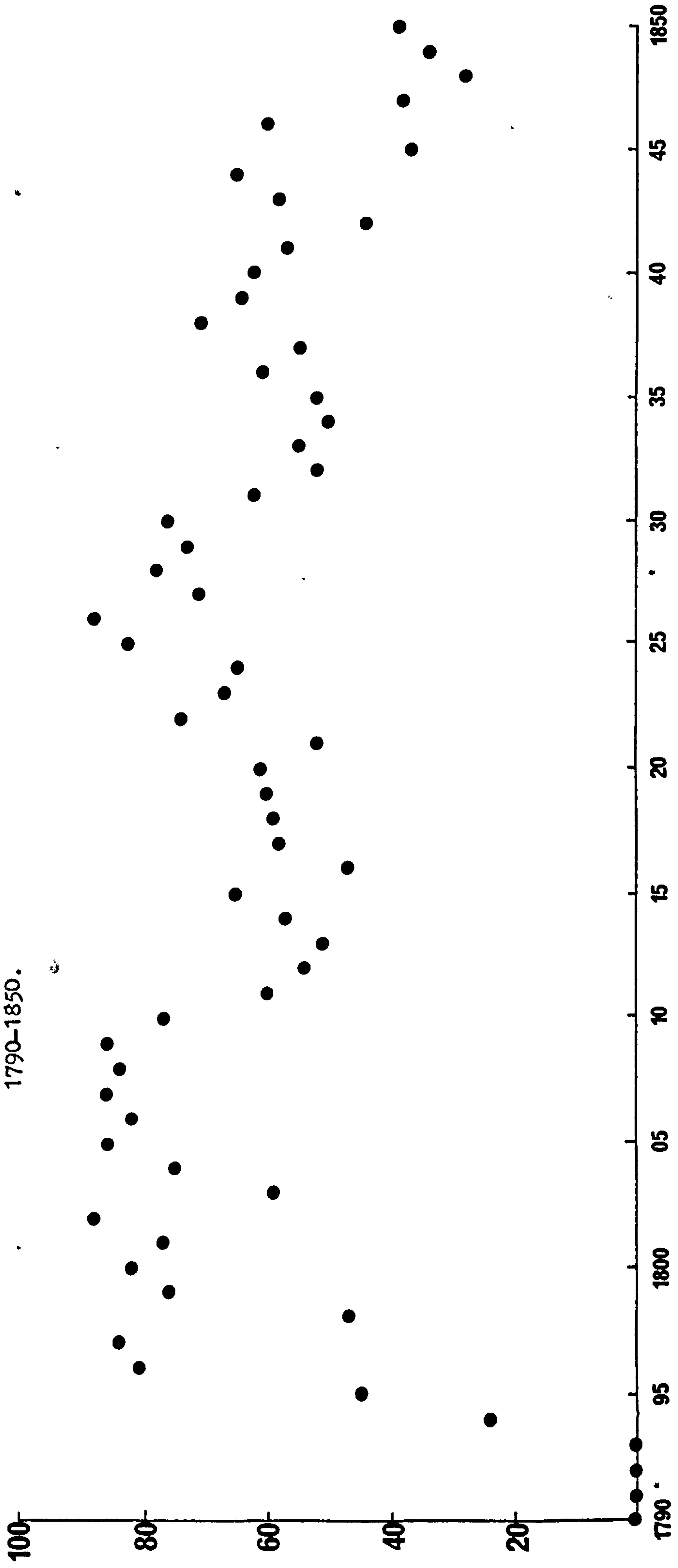
109 Particulars of Greenwich Hospital Estate, AC/W/Div.1/20.

110 Between 1734 and 1847, the Hospital paid out £159,440 to the descendants of the Third Earl in pensions, allowances and marriage portions. AC/W/Div.1/20.

Per Cent
Total Farms Let

Figure 8:1

Farms To Be Let By Proposal As Percentage of Total Farms Advertised To Be Let,
1790-1850.



Source: Newcastle Courant, 1790-1850.

was run by a system of eight Bailiffs responsible to one or more Receivers in Northumberland, in turn responsible to the Hospital Commissioners in London. Occasional visitations were made and it is from these that most information can be derived about the working of the estate.

The first surviving Visitation Report is for 1775.¹¹¹ It presents a picture of complete mismanagement and inefficiency. The Estate had last been surveyed and maps drawn in 1736, but by 1775 the farms were virtually unrecognisable. "the Tenants having, since that time, destroyed several of those fences, divided, subdivided, diminished or increased the different Inclosures as hath best suited their own convenience, & so thoroughly changed the Face of the Farms, that the aforesaid Plans, which were made at a great expence, are become in a great measure useless..."¹¹² There is further evidence that the tenants had been allowed to do very much as they pleased. The Hospital's leases bound the tenants to put no more than a third of their total acreage under the plough and to fallow a third of the arable every year;¹¹³ yet in 1775, of the 92 farms where details are given, comprising 24,044 acres, 10,614 acres or 44% were under the plough, even though much of the estate was little better than moorland. 52 of these farms had more than 50% of their acreage in tillage and 60% of even the rich grazing pastures on the Meldon estate had been ploughed out. On farms where the acreage in fallow or turnips is given, 1081½ acres were in fallow in 1775 out of an arable acreage, including turnips and fallow, of 5,027. Instead of a third in fallow, the Hospital tenants had about a fifth.

111 PRO/ADM/79/57

112 Ibid.

113 1815 Greenwich Hospital Report, NCRO/NRO/467/42/3/49.

The Viewers also condemned another liberty taken by the tenants, that of sub-letting their farms.

"The Board will observe that several of the Farms are in the Occupation of under Tenants who have been put in without proper leave contrary to an express Covenant in the Leases. A practise which we think ought to be put a stop to as productive of much mischief in the Hospital's Estates; such Sub Tenants being generally low indigent persons, who probably would not have been admitted by the Hospital, and giving more than they can afford to come into the Farms, have recourse to every means they can think of to make the most of their hard Bargains; embezzling the Timber; excessively ploughing, & not sufficiently manuring, the Land; neglecting the repairs of the Buildings etc etc."¹¹⁴

Of the 101 farms on the Hospital estates supposed to be farmed by individual tenants in 1775, 38 were then let to one or sometimes many more sub-tenants.¹¹⁵ Complaints against individual farmers were numerous, and from the Viewers' pleas to the Board to punish these tenants, it seems clear that the leases had been little more than paper tigers and that the tenants had been previously subjected to little or no regulation by their landlord or its agents. The Report is full of the sort of comment applied to Land Ends and Hill Closes, a farm of 300 acres near Hexham, between 250 and 260 of which were in arable.

"We also found that the Tenants had lately ploughed up about 16 acres of fresh Land without Leave, expressly contrary to one of the Covenants of their Lease, for which they are liable to pay 40s. p. acre and which we therefore recommend to be

114 PRO/ADM/79/57.

115 Ibid.

immediately demanded of them, more especially as they are exceedingly bad Husbandmen & Appearances of other Abuses are so strong against them."¹¹⁶

The comment on Allerwash, a farm of 400 acres mostly in arable, is also typical. "We have seen a great deal of bad Husbandry on the Estate, but nothing hitherto to be compared with what we met here; for which we think the Tenants should, whenever there is a proper opportunity, be shewn some mark of the Board's displeasure."¹¹⁷ Although the restrictive and very backward terms of the Hospital's leases would have done nothing to improve the standard of agriculture on the Estate had they been enforced, it is clear that giving complete liberty to the tenant certainly did not advance the science.

It would seem that the Hospital did not allow such behaviour to persist. A valuation of 1817 shows there to have been no sub-tenants at all,¹¹⁸ but a comment in the 1805 Report would seem to suggest that the standard of Hospital tenants was still low. The Viewers were examining Glororum, a farm of 447 acres isolated from the bulk of the estate. "... the tenant of it is not equal to his immediate neighbours in agricultural knowledge, if we may be allowed to judge from the state of his land, but he is superior to many of the Hospital's tenants upon the estates which we first visited."¹¹⁹ A degree of tolerant paternalism continued into the 19th century. When the tenant at Meldon retook the farm, the Viewers of 1818 remarked, "We cannot so much regret the lowness of the Rent, as it will give him a chance of retrieving a very heavy loss which we have reason to believe he sustained upon this Farm

116 Ibid.

117 Ibid.

118 PRO/ADM/79/59.

119 NCRO/NRO/467/42/2/183.

at his former high Rent".¹²⁰ The Hospital interests in lead mining - said to be so important that agriculture was relegated to a secondary matter¹²¹ - also continued and some indulgence was shown to smelters and pitmen who had improved their plots at their own expense. "It would therefore be thought a little hard to put them up to Rack Rent, some indulgence of this kind may also be necessary to enable the Hospital to retain in its Service the most experienced and industrious of its Workmen."¹²² But generally, the 1805 and succeeding Reports suggest that the Hospital had taken a new interest in its northern property and had at last gained control of its tenants. Certainly the leases of the early 19th century were much more realistic than those of the 18th and allowed most tenants to have two thirds or three quarters of their farms in tillage, and to undertake more varied rotations. The comment of Langley Barony in 1805 that "the improvements made of late years have been considerable... and the spirit of agriculture, prevailing so much in the North, is beginning to shew itself here, we have no doubt but that the future improvements will be rapid..."¹²³ could not have been made thirty years earlier.

Such a change of heart in the Estate suggests both stricter discipline and renewed interest. The former will be investigated shortly: the latter is confirmed by the enormous amount of money the Hospital was putting into the estate. A passage in the 1805 Report makes it quite clear that the policy was not to make allowances of rent to a tenant to enable him to make improvements that might never materialise and which the Hospital would then have to make at a double expense, but to accept nearly all the burden of improvement itself, giving the tenant only as much of the cost of improvement as would encourage him to take an interest

120 NCRO/NRO/467/42/4.

121 Thomas Bell, op.cit., p.118.

122 1818 Greenwich Hospital Report, NCRO/NRO/467/42/4.

123 NCRO/NRO/467/42/2.

in it.¹²⁴ It would seem that a tenant had merely to ask - at any time during his lease, not just at the start of a term - and improvements would be made for him. Large items, such as threshing machines, were installed at the landlord's expense at the request of the tenant but always on the payment of 8 per cent of the expenditure.¹²⁵ Of the 12 farms mentioned as having threshing machines in 1805 where it is clear whether the tenant or landlord supplied them, only 3 had been built by the Hospital, at an average cost of £889.¹²⁶ In 1815, of 15 other farms where the distinction is made, 12 machines had been provided by the landlord at an average cost of £567.¹²⁷ It would appear that the Hospital paid the cost of all other improvements without exacting a percentage, and that this included drainage.¹²⁸ For a landlord to encourage extensive drainage at this early date is remarkable enough, but for him not to exact a percentage is totally unprecedented in the County. All the Hospital demanded was that the tenant lead the materials. "... the Drains recommended will be undertaken as soon as the Tenants consent to the Carriage of the Materials which is their proportion of the improvement contemplated."¹²⁹ As late as 1832, such expensive improvements were still being undertaken without a percentage,¹³⁰ though the Hospital did exact 5% for drainage later. Hospital generosity even extended to the provision of lime and bone manure where the tenant's situation was such that he could not economically supply these himself.¹³¹ Particulars of

124 Ibid.

125 1815 Greenwich Hospital Report, NCRO/NRO/467/42/3/54-5.

126 Two of these were driven by wind. In one other case, the landlord built a wheelhouse at £6 per cent. NCRO/NRO/467/42/2.

127 NCRO/NRO/467/42/2-3.

128 NCRO/467/42/3/56.

129 Lees Farm, Langley, NCRO/NRO/467/42/4.

130 Auctioneer's advertisement for sale of Greenwich Hospital property. N.C., April 28th 1832.

131 AC/W/Div.1/20.

Hospital expenditure on one farm over a period of years remain. George Hughes of Middleton Hall, Ilderton, was one of those rare tenant farmers who kept rudimentary accounts. The 1815 Report states that about £2,400 had been spent on this one farm since the 1805 Visitation.¹³² In fact, £3,225. 7. 5. had been allowed for improvements between 1806 and March 1815, and £4,352.18. 7 $\frac{1}{2}$ was allowed between 1806 and October 1824, all of which was subtracted from the rent.¹³³ Despite this massive expenditure, the rent of Middleton Hall, though it was maintained at £1100 between 1806 and 1822, then sank to £1000 and to £850 in 1823. Of a gross Estate rental of £61,000 in 1820, £33,400 was remitted to London and £27,600 remained to be spent on the Estate, though not all on improvements.¹³⁴

Such heavy expenditure, though some was financed by "...the floating Capital of the Hospital... arising from the large Receipts of Prize-Money during a long protracted War",¹³⁵ must have raised doubts as to ultimate profitability. Lord St. Vincent had suggested in 1822 that Government stock might be more profitable, though he was more concerned with the difficulties of stopping corruption.¹³⁶ The sentiment that a certain 5% might be safer than the risks of landed property was repeated in 1860.¹³⁷ Such speculation must have been quelled in the interim after the disastrous sale of some of the northern estate in 1833.¹³⁸ The land comprising Keswick, Meldon, the farm of Middleton Hall in which so much money had been invested, and the Wark Estate, sold for £191,884 "in accordance with a popular but mistaken opinion in favor of the sale of the whole of the property and the investment of the proceeds of [sic]

132 NCRO/NRO/467/42/3/8

133 NCRO/ZSI/17. See also NCRO/ZSI/50, 94.

134 .1821 Greenwich Hospital Report, PRO/ADM/79/60/2.

135 NCRO/NRO/467/42/3/57.

136 Lord St Vincent to Edward Locker, Nov.4th 1822 in evidence of John Livingston Jay, 1860 Greenwich Hospital Report.NCRO/ZBM/19/39-40.

137 NCRO/ZBM/19/119-20.

138 Vide N.C., April 30th 1831.

the public funds".¹³⁹ The Duke of Northumberland's purchase of most of the Wark Estate emphasised the extent of the blunder when his mineral exploitation recovered the purchase cost in only two years.¹⁴⁰ A mistake of this magnitude was enough to deter the sale of further lands during the period under consideration even though the Receiver advised the sale of some outlying parts in 1860.¹⁴¹ The Hospital felt stuck with the Estate, profitable or not. That the Estate proved to be profitable was largely a result of past generosity coupled with yet another move which had unforeseen consequences.

The link between the local administration of the Hospital's Estate and London had always been weak. All practical power lay in the hands of the local Receiver.

"The three Commissioners have the absolute control of the estates in the north, but generally in important matters they solicit the sanction of the Admiralty... As to works and repairs, the receiver in the north sends up periodically a statement of what he considers necessary, and the Commissioners approve or disapprove of his recommendations."¹⁴²

In theory, the Commissioners were in control; in practice if they tried to do anything out of the ordinary, they required the consent of the Admiralty and if it touched upon the conditions of the Act of 1734, of Parliament. The Commissioners could send a delegation to inspect the estate, but this was expensive and could only be done occasionally if propriety were to be observed. "... the chief Agent is therefore a more immediate representative of, or more nearly assimilated to the owner himself, in this, than in most other cases, and possesses power and

139 AC/W/Div.1/20.

140 NCRO/ZBM/19/39.

141 NCRO/ZBM/19/120.

142 NCRO/ZBM/19/320.

authority, with less personal control or liability to it than other Agents."¹⁴³ Not unnaturally, the power given to the local administration was frequently abused. "Bell, in particular, the Bailiff of Langley Barony, appears to have been extremely remiss in his duty, not to give it a harsher appellation."¹⁴⁴ Various attempts were made to encourage greater honesty and efficiency - two Receivers were appointed each to check on the other,¹⁴⁵ Bailiffs were given farms at nominal rent¹⁴⁶ and schemes were mooted for sharing with the Bailiffs the penalties tenants paid for breaking lease covenants.¹⁴⁷ By 1817, the Estate was virtually farmed out, the two Receivers being paid at the rate of $2\frac{1}{2}\%$ each of the rent and profits of the Estate out of which they had to apportion what they felt was just to the eight Bailiffs.¹⁴⁸

The office of Bailiff seems to have been perpetual and virtually hereditary¹⁴⁹ - not generally the most reliable method for employing the best men - while the senior position of Receiver went to the man with the most influential friends. Again, this method was hardly a guarantee of efficiency, as Lord St. Vincent admitted when he charged himself "with a very improper appointment while at the head of the Admiralty, although it was done at the pressing solication of two men of exalted character"¹⁵⁰. It was in just such a way that John Grey became sole Receiver in 1833. Grey came to personify advanced agricultural methods in Northumberland in the way that Culley had done before him. Indeed, he came from the same area where he had farmed under Earl Grey and had been neighbour in his youth to George Culley at Milfield. And it was through his connections

143 NCRO/NRO/467/42/2.

144 1775 Greenwich Hospital Report, PRO/ADM/79/57.

145 NCRO/NRO/467/42/2.

146 NCRO/NRO/467/42/4.

147 PRO/ADM/79/57.

148 PRO/ADM/79/59/437-8.

149 PRO/ADM/79/60/11-12.

150 NCRO/ZBM/19/39-40.

with Earl Grey,¹⁵¹ and for his services to the Whigs as an orator that Grey obtained the post of Receiver, worth £1200 per annum.¹⁵² Grey proved to be a totally exceptional administrator and held the post until his death in 1863. Not only was he an agriculturist of some national renown,¹⁵³ but he also understood local agriculture, particularly the most improved agriculture from the north of the County.¹⁵⁴ Agriculture was his life, its improvement his mission, and the Receiver-ship his opportunity.

"When I went there in 1833 I was almost killed in the first year and a half; for I rode over every farm and every field, and I made a report every night when I came home of its value and its capabilities, whether you could employ water power instead of horse power, and so on. This was a thing that every one could not have done, but I had been brought up in the country, and seven or eight hours in the saddle was no great matter to me."¹⁵⁵

It is quite clear from later evidence that Grey maintained the independence of his predecessors, and even increased that independence as his reputation grew.¹⁵⁶ It is also clear that the Estate tradition of heavy expenditure on improvements suited Grey well. He estimated that he had spent £100,000 in improvements between 1834 and 1860 and that he had thereby increased the value of the Estate by £300,000. Money returned to London had risen from £25,000 in 1839 to £40,000 in 1860¹⁵⁷ and Grey was in no doubt that Hospital funds could not be more profitably employed than in improving the Estate. Comprehensive rentals no longer exist by which Grey's confidence can be checked, but they

151 NCRO/ZBM/19/185.

152 Thomas Bell, op.cit., p.251.

153 F.M., 2nd series, 14, 1846, pp.1-4.

154 John Grey wrote the Prize Essay on Northumberland farming for the Royal Agricultural Society, 'A View of the Past and Present State of Agriculture in Northumberland', J.R.A.S.E., 2, 1841, pp.151-92.

155 NCRO/ZBM/19/119-20.

156 e.g. NCRO/ZBM/19/46.

157 NCRO/ZBM/19/117, 119.

were produced in 1860 and seemed to satisfy the opponents of high investment.¹⁵⁸ Encomiums were openly heaped on Grey, and gave tacit support to Hospital policy.

"... it is impossible to praise too highly the judicious application of capital to improvement. A very wet property has been drained; it was an ill-built property, and it is now well-built. The farm-houses are of the very best; and instead of tenants with not much capital to make improvements, we find tenants with greater capital and greater skill."¹⁵⁹

In 1870 it was stated that "... the expenditure since 1815, both in buildings and draining, has paid five per cent interest, and that in addition an increase of £5,000 a year in rental has accrued since the year 1839",¹⁶⁰ though it would seem that Grey's successor, his own son Charles, was not imbued with quite the same capacity as his father.¹⁶¹ John Grey's personal influence on an estate over which he was allowed virtually complete power cannot be over-rated. George Tierney said of him in 1860, "... he is a man of a thousand. If he was to leave us, we should be in a difficulty, and no one could say where we are to turn to find such a man - I know nobody like him".¹⁶²

The remarkable power invested in John Grey enabled him to make radical changes to the system of letting Hospital farms that proved essential to the improvement of the Estate. The Act of 1734 had allowed Hospital farms to be let for up to 21 years and had insisted they be let by public tender that there be the minimum chance of corruption and the maximum chance of the highest possible rent.¹⁶³ The former provision

158 NCRO/ZBM/19/46.

159 NCRO/ZBM/19/185.

160 1870 Greenwich Hospital Report, PRO/ADM/79/62/2.

161 Ibid.

162 NCRO/ZBM/19/108.

163 NCRO/NRO/467/42/2/216.

was advantageous to both landlord and tenant where there were sensible leases to be enforced (see pp.162-4). This was not the case on the Hospital Estate in the 18th century. The latter was reasonable during periods of rent stability. This was not the case towards the end of the 18th century and well into the 19th. The Act allowed the remission of no rent to a sitting tenant, either as a permanent reduction or as an abatement. All the Receivers could do was allow a tenant to resign his lease and then to offer the farm to public competition again. Consequently, it was likely that successful candidates for farms would have already promised an inordinately high proportion of their capital to paying rent and may well have had little left to finance their own improvements.¹⁶⁴ Not surprisingly, it was rare for a Hospital tenant to retake a farm and there was little incentive for a tenant nearing the end of his lease to keep his farm in good condition.¹⁶⁵ These two factors may go some way towards explaining the large contribution towards improvement the Hospital felt it necessary to make on its estate.

So great was Grey's power, that despite the provisions of the Act, he immediately set about changing the system. The first serious amendment had, in fact, been recommended by Edward Locker in his Visitation Report of 1822 in which he suggested that the best possible way to relieve the tenants was to reduce their rent for a short fixed period.¹⁶⁶ The evidence from Middleton Hall confirms that this was actually implemented. Grey's changes were much more sweeping. From 1834, farms were advertised only if suitable arrangements could not be made with the existing tenant. Leases continued to be for long periods, but the tenant was now compensated for improvements; particularly the application of manure, he might have made towards the end of the term,

164 PRO/ADM/79/60

165 NCRO/NRO/467/42/2/216.

166 PRO/ADM/79/60.

the period during which farms had previously fallen badly out of condition.¹⁶⁷ Grey's enthusiasm for improvement was not simply the result of undeviating loyalty to his employers. He was also very much a man of the people, both tenants and labourers,¹⁶⁸ and ~~even~~ introduced prizes for improved agricultural techniques within the estate,¹⁶⁹ the success of which scheme encouraged the formation of the Tyneside Agricultural Society. Only by an improvement in the standard of agriculture could both sides be equitably served.

The example of the Greenwich Hospital Estate in Northumberland has been used to show how greatly the administration and administrative policy of an estate could affect the standard of agriculture on it. An attempt to study agricultural improvement in terms of rentals or corn prices or innovation waves on such an estate would be meaningless without first giving serious consideration to the peculiarities of its management. Efficiency of local control, letting policy, local autonomy, attitude towards tenants, investment policy - all were vital controls on the climate which permitted agricultural improvement. The example of this estate gives some justification to the theses propounded earlier. The example of the Duke of Northumberland's, though administered in a totally different manner, gives more.

The Estate of the Duke of Northumberland.

The Duke of Northumberland owned property in the County comprising 134,500 acres in 1807¹⁷⁰ and by 1847 augmented to 161,000 acres by the addition of land in North Tindale and along the Reed.¹⁷¹ He then owned about one eighth of the whole County. "Even in an extensive county like

167 NCRO/ZBM/19/118.

168 J.E. Butler, Memoir of John Grey of Dilston, 1869, passim.

169 N.C., Sept.15th 1843.

170 Notices Relating to the Percy Estates. AC/Library, Shelf 44/5, 187A/152 p.101.

171 NCRO/ZHE/32/3.

Northumberland, and containing as it does so many fine properties, the preponderating influence of an estate so vast as the duke's must be felt, and must effect, either for good or for bad, the general rural economy of the county."¹⁷² Such was the standard of agriculture upon the estate that it can only be assumed that this influence must have been wholly bad. A letter of 1767 to the Duke in London suggests that all was not as it might have been.

"... our conversation before we parted happen'd to roll on your Grace's Estates in various parts of this County, which they assured me were now getting into a lamentable condition, Your Grace's Tenants at Alnham, upon Tynesside, up North Tyne, in Tinmouthshire etc having committed the most horrible Devastations upon their ffarms by ploughing almost the whole out & leaving little or no Grass Land... Upon the whole they concluded that your Grace's abovementioned Estates, instead of rising in value as those of private Gentlemen usually do, would suffer a very great Downfall in the Present Rental."¹⁷³

This was still the situation after the Napoleonic Wars when Matthew Culley wrote that, "the Duke of North^d allows 25 per cent altho' from the barbarous manner in wh his estate is conducted no particular rise had taken place".¹⁷⁴ And this remained the situation until 1847 when Algernon became Fourth Duke and at last started to improve "the very low and dilapidated condition of the estate".¹⁷⁵ John Grey, a political as well as agricultural enemy of the first three Dukes, wrote to Earl Grey in 1845. "There may be excuse for the slow advance of poor men on small properties which they can only improve very gradually, or by means

172 John Wilson, Northern Farms and Farming, 1864, p.8. NCRO/ZSW/Add.&Misc.

173 Coll. Forster to Duke, March 30th 1767. AC/Q/Div.11/3.

174 Matthew Culley to Arthur Young c.1820. NCRO/ZCU/44.

175 John Wilson, op.cit., p.9. NCRO/ZSW/Add.& Misc.

of their own industry; but what can be said for such men as the Duke of Northumberland, whose estates, save in a few instances within sight of the castle,¹⁷⁶ have undergone no improvement for the last century, notwithstanding the movement in that direction all around them?...

Look at the folly of that man. He buys land wherever he can, which returns him perhaps three per cent., and leaves his wide acres all over the county in poverty, to grow rushes and all but what they ought to grow. That same money, employed in improvements upon the land he originally had, instead of adding to the extent and disgrace of it, would have paid him double or treble that amount of interest..."¹⁷⁷

Such was the influence and power of the first three Dukes that it is very difficult to discover reasoned assessments of their contribution to the agriculture of their Estates that are not the product of sycophancy.¹⁷⁸ Sir Hugh Smithson married the ~~Duchess~~^{Countess} of Northumberland in 1748, was created Earl of Northumberland in 1750, Duke in 1766, and concerned himself with rebuilding Alnwick Castle and with trying to forget that he had even been called Smithson. His son, also Hugh, succeeded him in 1786, and his, again Hugh, in 1817, both being remarkably similar in their high Tory and Church principles, their love of soldiering, their affliction with gout, and their autocratic manner.¹⁷⁹ The Fourth Duke, Algernon, inherited the chaos left by his brother and ancestors in 1847 and was a man of very different character who determined to effect radical improvements to the appalling agriculture of his Estate.

The Duke's farms in the middle of the 18th century were generally let on long lease, often of 21 years, in common with most other

176 Vide N.C., Sept. 6th 1783.

177 John Grey to Earl Grey, March 10th 1845 in J.E. Butler, op.cit., p.220.

178 e.g. G.Brenan, A History of the House of Percy, 1902, pp.445-6, 459.

179 Ibid., passim; J.Lingwood, A Glance of Alnwick, 1848, School of English, Newcastle University; Harmer Wilson, Durham Chronicle, Feb.17th 1821.

Northumberland estates. This remained typical until the 1790s when the Duke allowed nearly all such leases to lapse¹⁸⁰ to be replaced by "the abolition of Rack & discontinuance of subletting, with the mode of renting from year to year subject to your Grace's pleasure & Control"¹⁸¹ which continued until the mid-19th century. At a time, therefore, when the importance of long leases to encourage improvement by tenants was being increasingly recognised in Northumberland (see p. 164), the Duke's Estates moved in the opposite direction. Leases had never developed much on the Northumberland Estate. The 17th century lease form was that of the mid-18th, while the rudimentary provisions of the later 18th century mention little more than the retention of all grass land, the necessity to fallow once for every two corn crops and of manuring with lime.¹⁸² This development halted altogether at the end of the century when nearly the whole estate was let at will, without lease and under the personal supervision of the Duke and his agents. The lack of familiarity of even the Fourth Duke with the lease system is perhaps best seen in the Stanwick Scandal of 1855 when pressure from tenants for leases produced a compulsory form so impractical and vindictive in the covenants it required that some of the best tenants were obliged to quit.¹⁸³ Not that tenants consequently lacked security upon the Duke's Estates. Traditions of loyalty were strong. Tenants frequently held the same farm for life and standing instructions stated that all farms were first to be offered to the previous tenant's son.¹⁸⁴ The list of tenants who volunteered to lay the first stone of the Percy Column in 1816 shows no shortage of men who could trace back their families' tenancy on the Estate for centuries.¹⁸⁵ Such blind following of tradition permitted

180 AC/L/Div.2/14-24.

181 Commissioners to Duke, March 8th 1807. AC/Z/Div.1/12b/181.

182 NCRO/ZHE/34/14.

183 NCRO/ZHE/34.

184 General Instructions, dated 1817 and 1839. AC/Upper Room/3rd shelf up immediately on the left behind the door (uncatalogued).

185 NCRO/W/1/7.

almost incredible abuses. When Richard Robson, the bailiff of Alnwick, inspected a farm in 1806 he reported, "I found here a Rich Tenant, and a poor Exhausted Farm, the Reason he gave to me for not having made some Improvement on his Farm, is that he had no lease,. I Enquired how long, he had been the Occupier he Replied about 30 years... "¹⁸⁶ When John Wilkinson lost his farm for subletting in 1807, a special reminder from the Commissioners was necessary to prevent the farm being let to the sub-tenant,¹⁸⁷ and while Mr. Armourer was complaining of the state of Catcleugh of which he had recently become tenant,¹⁸⁸ the Commissioners were complaining of the state in which he had left his last farm, also one of the Duke's, at Overacres.¹⁸⁹

Tenants from other estates may well have found it difficult to change to or from the Duke's Estate. Of all Northumberland landlords, only the Duke allowed no way-going crop.¹⁹⁰ Consequently, a tenant of the Duke would have required considerable capital to tide him over the move to another landlord's farm. It is also relevant that the Duke's term finished on Lady Day (March 25th) but every other landlord in Northumberland finished on May Day (May 12th). While this might have discouraged the introduction of fresh blood and new ideas from tenants from outside, it would certainly have made it difficult for hinds from other estates to 'flit' to the Duke (see p.189). It may well have been for this reason that the Duke attempted to anchor his farm labourers by giving them allotments and cottages at low rent. Original instructions demanded 6 acres each,¹⁹¹ later reduced to 5,¹⁹² and in practice very

186 'Return of the Buildings and Fences upon the Duke of Northumberland's Estate 1806'. AC/Middle Room/5th shelf up on the left past the window sill (uncatalogued).

187 Commissioners to Duke, Jan.5th 1807. AC/Z/Div.1/12b.

188 Ibid., April 10th 1808. AC/Z/Div.1/12b.

189 Ibid., June 17th 1809, AC/Z/Div.1/12b/484.

190 Evidence of George Ramsay, Report of Select Committee on Agricultural Customs, 1848, p.192.

191 Directions for the Auditors, Jan.1st 1796. AC/O/Div.2/G.

192 General Instructions and Regulations 1817. AC/Upper Room/shelves immediately on the left (uncatalogued).

much less. At Newham, 127 acres was given over "for the Mill, & about 40, or 50 Cottagers to be emancipated from Bondage".¹⁹³ At Newburn Hall, difficulty was experienced giving the cottagers even half an acre and the Duke was asked if a quarter acre might do.¹⁹⁴ Some farms were severely docked to provide the needed land. Wandon farm in Chatton, which had had 312 acres, was an example. "The Cottagers from this farm will require near 50 acres, so that the farm will be reduced to about 262 acres."¹⁹⁵ Culley thought little of the system,¹⁹⁶ as did M^cCulloch,¹⁹⁷ and by the end of the century all traces of what had once been general on the Duke's Estate had disappeared altogether.¹⁹⁸

In common with other Northumberland estates of the 18th century, the Duke's Estate was administered by Bailiffs whose remuneration was a farm at nominal rent. Where the Duke differed was in retaining this inefficient system into the 19th century. Most bailiffs held their position for decades and were not infrequently succeeded by relatives. That the system was not productive of the best men is indicated by the fact that the dilapidated farm at Catcleugh complained of by Mr. Armourer had long been in the hands of Mr. Dodd, the Tindale Bailiff, and that the new Bailiff was to be none other than the neglectful Mr. Armourer himself.¹⁹⁹ Controlling the Bailiffs were two or sometimes three Commissioners in Alnwick whose job it was to visit each Bailiwick "at least once in every three, or four Years at the furthest",²⁰⁰ and to report regularly to the Duke or more usually to his agent at

193 Commissioners to the Duke, 1807. AC/Z/Div.1/12b/188.

194 Ibid., June 20th 1807. AC/Z/Div.1/12b/223.

195 Ibid., July 4th 1807. AC/Z/Div.1/12b/239.

196 George Culley to Dr. Fuller, June 29th 1801, NCRO/ZCU/31; George Culley to Arthur Young, 1800, NCRO/ZCU/3.

197 J.R.M^cCulloch, op.cit., 1, p.463.

198 Seymour Bell, Collections Relating to Agriculture, c.1880. NCL/L630.

199 Commissioners to Duke, April 10th 1808 and June 17th 1809. AC/Z/Div.1/12b.

200 General Instructions dated July 16th 1817. AC/Upper Room/shelves on the left behind the door (uncatalogued).

Northumberland House in London who would then deal with the Duke, an attempt being made to check on all agents by requiring each to give "a particular Relation of what was done, with Your own Observations thereon independently".²⁰¹ The system outlined in 1769 demanding "Reports to be made from time to time, at least once in every Quarter of a Year, by all their Grace's Officers, to whom any Thing is herein referred, of what Progress has been made, & what has been done in the Execution of the Matters severally referred to them: such Reports to be made either immediately to his Grace, or to Mess^{rs} Butler & White, at their Office at Northumberland House."²⁰² remained substantially the same until the Fourth Duke's total reorganization. The existing Commissioners were then removed and replaced by a single man with extensive knowledge of both the Estate and of agriculture.²⁰³ It could then be reported that "his grace contemplates important changes... with a view to encourage the investment of capital in the improvement of the estate".²⁰⁴

The Estate's administration must have always been awkward, but the characters of the Second and Third Dukes made it even more difficult. In 1796, the Second Duke issued detailed instructions of exactly how the estate was to be run.²⁰⁵ These were extended in 1804²⁰⁶ and remained substantially unaltered until the time of the Fourth Duke, being endorsed by the Third Duke in 1817 and 1839.²⁰⁷ The thundering autocracy of these documents is unrivalled in any other estate material examined. The Duke ordered his agents in 1804 "always to bear in Mind, that the Estate is mine, and that in the Management of it, it is my peculiar Province to Direct, as it is Their's to carry such Direction into

201 April 23rd 1769, AC/P/Div.2/3/p.

202 'Directions for the Officers and Agents...', Sept.9th 1769, AC/P/Div.2/2/cc.

203 Richard Welford, Men of Mark 'Twixt Tyne and Tweed, 1895,3,p.494.

204 N.C., Oct.1st 1847.

205 Directions for the Auditors, Jan.1st 1796. AC/O/Div.2/G.

206 AC/O/Div.1/2/S.

207 AC/Upper Room/shelves on left immediately behind the door (uncatalogued).

Execution". And so the Dukes, completely ignorant of agricultural technique, assumed personal control of a vast estate as if they were commanding an army with Commissioners more familiar with the law than with agriculture for officers, Bailiffs experienced only in exploiting their position for sergeants, and tenants deprived of all individuality and initiative as troops. Indeed, the tenantry was mobilised at the Duke's expense into a unit 1500 strong during the Napoleonic Wars and all cottages on the estate had large 'registration' numbers affixed to their doors.

The provisions of the various lists of directions are remarkable. That there were to be allotments for labourers and no more leases except for the stock farms has already been mentioned, but the Duke issued other drastic orders.

"As I disapprove much of large Farms, which the Tenant cannot possibly cultivate properly himself... I will have no Farm let to any One Person exceeding 300 Acres or £150 [an exception was again made for stock farms] and that Quantity to be but very rarely granted. In general the Farms not to exceed Two Hundred & Fifty-Acres. When the Lease therefore of any Farm expires which exceeds the above 300 acres it is to be divided."²⁰⁸

Once again, the Duke was acting directly contrary to informed agricultural opinion that large farms, especially in an area already dominated by large farms, were generally more conducive to agricultural improvement (see pp.29-30). By these directions, the Duke assumed active personal control of the agriculture of the whole Estate and thereby crippled its development.

"Whenever at any time any Alterations, or new arrangements shall appear proper to be made, either by dividing of Farms - taking ground from Farms - changing of Tenants - making new Buildings - repairing old ones, or in any other way - such

alterations and arrangements with reasons for the same, are first to be laid before me, in writing, under my hand; which mode of my Signature is, on all occasions, to be the only proper authority for carrying anything into execution."²⁰⁹

One certain result of the Duke's subdivision of his farms was to increase his control of County elections after 1832,²¹⁰ but this can hardly have been the case in 1804. Nor is any reason, apart from the Duke's will, ever presented. Not surprisingly, the practical application of the instructions brought some problems. If new farms were to be created, then new farm buildings had also to be created. Newham township, containing 2,527 acres, had been let as five farms and was to be divided into eight until the Duke was told of the cost of new farmsteads.²¹¹ As he had expressed considerable alarm in the 1804 Directions that disbursements had reached a record peak, he imposed the ludicrous solution of letting Newham not as five farms, but "in 4 double & 1 Single farms,.. & it is thus we are directed by your Grace's instructions to continue them for the present, in order as much as possible to prevent the immoderate necessity of building".²¹² An addition to the 1804 Directions, dated July 1810, reveals the Duke's policy towards such improvements. "Seven pounds for every £100 of the clear receipts at each Audit of the rents of Land only i.e. the clear rents of the Land, which are paid into the hands of my Banker in London, is the only Sum, which will be allowed to be expended in Buildings and Repairs." No money whatever was to be left on account for these purposes. When the Duke's farms were advertised, as they occasionally were, the advertisement carried the warning that "No Money whatever will be expended on Buildings, unless mentioned in the Proposals, and especially agreed for before the

209 AC/O/Div.1/2/S.

210 'A Northumberland Farmer', Letter to the Enfranchised Tenantry of the County of Northumberland, 1833, L. & P. Tracts, 191, no.17.

211 March 28th 1807, AC/Z/1/12b/188.

212 July 4th 1807, AC/Z/1/12b/240.

Farms are let".²¹³ Not that a promise then meant much as George Wilson, tenant of Loning Head since 1803, complained to the Commissioners in 1807.²¹⁴

The tenants of the stock farms in Reedsdale refused to enter in 1808 unless repairs were made to the shepherds' houses, "most of which are very bad & unsafe to live in... there is not one of the Shepherds, or Cottage Houses, that has been kept even 'drop dry', for these several Years - & the Dykes are in an extremely bad state at present".²¹⁵

The previous winter had been particularly hard for the Duke's stock farmers as the absence of steils on his estates had meant inordinately high losses from sheep being overblown with snow.²¹⁶

Letter after letter tells of inadequate expenditure; for example,

"The Fences on W. Hay's Farm are particularly well kept in order &

Repair also the Buildings which have an Annual Repair yet many of them

are failing in the Walls & Roofs from Length of Time, many of them

being built with Stone & Mud instead of Lime".²¹⁷ When George Hedley,

the tenant of Walbottle Dean Farm, declared he would have to leave in

1809 because his farmstead was falling down, the Commissioners admitted

that a new onstead was desperately needed as a result of the ruin

caused by the previous tenant, and that they should build a new one, not

to oblige Hedley, but because the farm would otherwise be unlettable.²¹⁸

Normally what repairs were done were reflected in increased rental, but

a letter of 1802 suggests that the Duke wished to charge a percentage as

well until informed that this would necessarily lower his rental.²¹⁹

Nor does it seem that the condition of farm buildings improved during

the 19th century. Of 326 farms listed in the State of Farm Reports²²⁰

213 e.g. N.C., Oct.8th 1814.

214 March 9th 1807, AC/Z/1/12b/182.

215 D.W.Smith to Duke, April 10th 1808. AC/Z/1/12b.

216 William and David Smith to Duke, June 18th 1808.AC/Middle Room/
book marked 'Letters to His Grace 1806-9'.

217 'Return of the Buildings and Fences upon the Duke of Northumberland's
Estate 1806'.AC/Middle Room/5th shelf up on the left past the
window sill (uncatalogued).

218 Oct.21st and Nov.4th 1809, AC/Z/1/12b/512, 515.

219 Robert Forster to Duke, June 14th 1802. AC/Z/Div.1/9b.

220 State of Farms Reports 1827-, AC/Middle Room/4large boxes, 2nd shelf
up, 6 paces to the right from the door (uncatalogued).

in 1828, 227 had farm buildings described as good, and 99 or 30% had buildings described as average or poor. In 1850, of 290 farms listed, only 154 had buildings rated as good, and 136 or 47% described as average or poor.

Though the Estates had never been successfully administered from London, the era of 'General Directions' brought intensified difficulties. Reports on repairs to fences could not, it had to be explained, be submitted until the fences were actually repaired,²²¹ nor could the stock farms be let to good tenants if Northumberland House insisted they all be offered at once.²²² The administration stumbled from problem to problem, meeting arrears with dismissals as the Directions insisted or with abatement after abatement when the arrears became universal. John Mason eulogised in 1826,

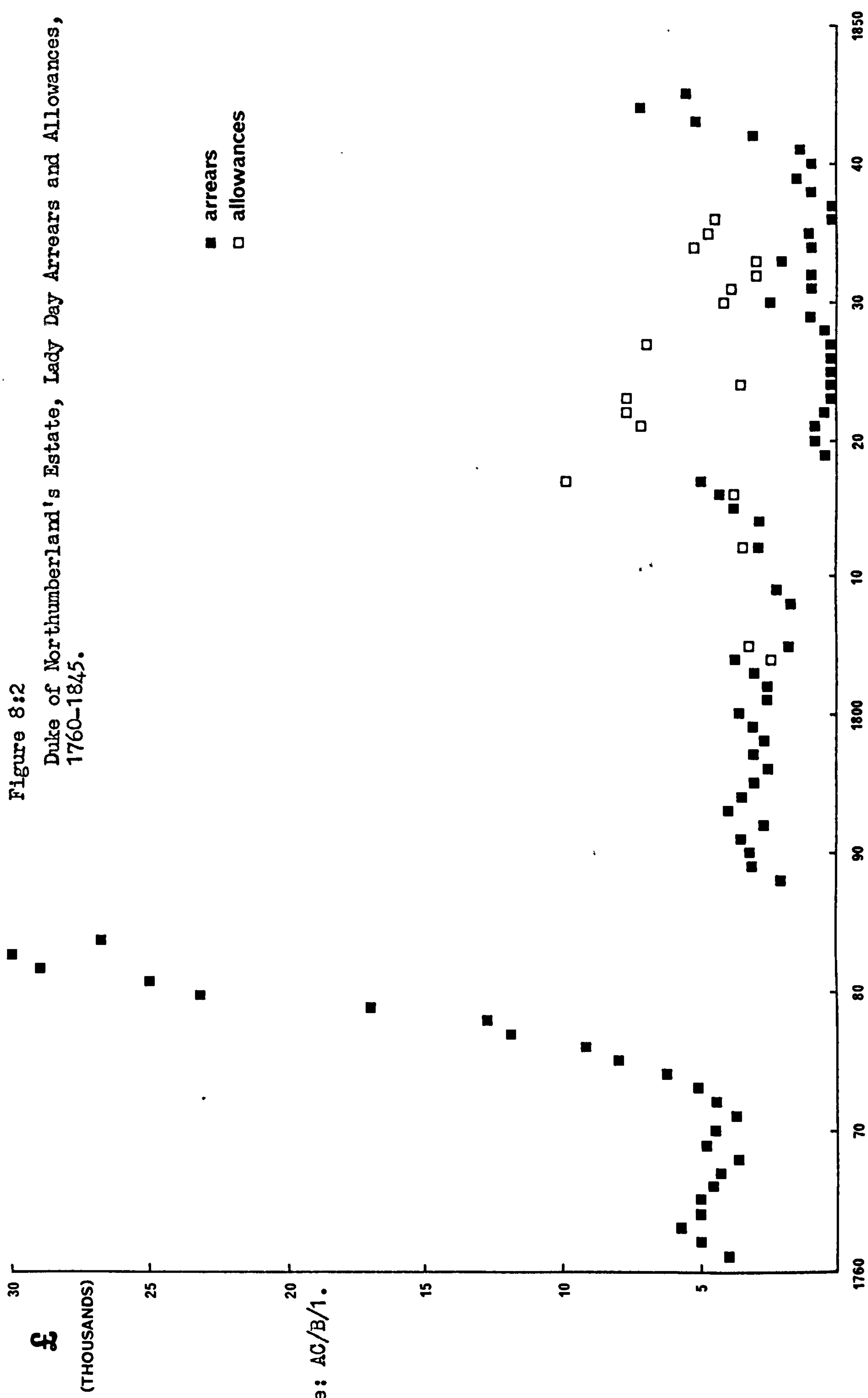
"In the first years of agricultural distress, when it appeared as if the whole farming interest was to sink in irremedial ruin, that nobleman [the Third Duke] stepped forward, and, by munificently deducting twenty-five per cent from the rents of his tenantry, arrested the work of destruction in the extensive district over which he presided, and not improbably by the influence of his example, was the means of restoring prosperity to the country."²²³

The Duke was, in fact, so totally unrealistic in not adapting his rents to meet changed times, that he gave regular abatements between 1804 and 1836 rather than reduce his rents or face arrears more massive even than those accumulated between 1778 and 1784. Figure 8:2 shows the result of the Duke's failure to meet the earlier crisis with allowances, his later use of allowances even during the period of high war prices, to reduce arrears, and the persistent reliance on allowances

221 D.W. Smith to Duke, May 10th 1808. AC/Z/Div.1/12b.

222 April 18th 1807, AC/Z/1/12b/199.

223 John Mason, The Border Tour, 1826, p.8.



Source: AC/B/1.

after the War to keep arrears to a minimum. When allowances ceased in 1836, arrears rose once again. Figure 8:3 traces the Duke's rental for the century. Too much importance should not be attributed to the spectacular rise that seems to have taken place between 1750 and 1780. The Duke was one of the last landlords in the County to change from a system of large fine and small rental. Although this process was virtually complete by 1754, it must have taken some time to find the realistic rent for farms on 21 year leases, as many were. The remainder of the graph is more significant. The depression of the 1780s caused a drop in rents or at least a stagnation in their rise and the War period a steady increase that became only nominal once the Duke chose to maintain artificially high rents by means of allowances. This high nominal rental was maintained for three decades after the War, yet it is clear that without the aid of allowances, rent during this period would have sagged badly despite an increase of nearly 20% in the area of the Estate. After allowances were stopped, rents trailed downwards to a realistic level. It is perhaps doubtful whether the Duke or his tenants ever thought in terms of real rent. The term 'rent' was dropped from the accounts altogether after 1784 and they thereafter concern themselves with the 'charge', a most complicated concept which covered whatever was reckoned to be the real rent - and when all tenancies were held at will that was a factor which could frequently have varied - plus all accumulated arrears minus whatever allowances were offered. Such a system must have engendered among the tenants a resignation to pay what they could rather than a determination to pay what they should.

Figure 8:4 traces the total money received each Lady Day from the whole landed Estate and total Lady Day disbursements on the Estate. Receipts generally increased throughout the century, but the amount received varied alarmingly in the post-War period. When investment in the Estate might have been expected to place rentals on a realistic footing and to ensure a more regular income, it was not forthcoming.

Figure 8:3

Half-Yearly Rental for Duke of Northumberland's Estate, 1750-1850.
Measuring Half Yearly Lady Day Charge minus the arrears from
the previous Michaelmas. (Pre 1784 is simply half yearly
rental).

Source: AC/B/1.

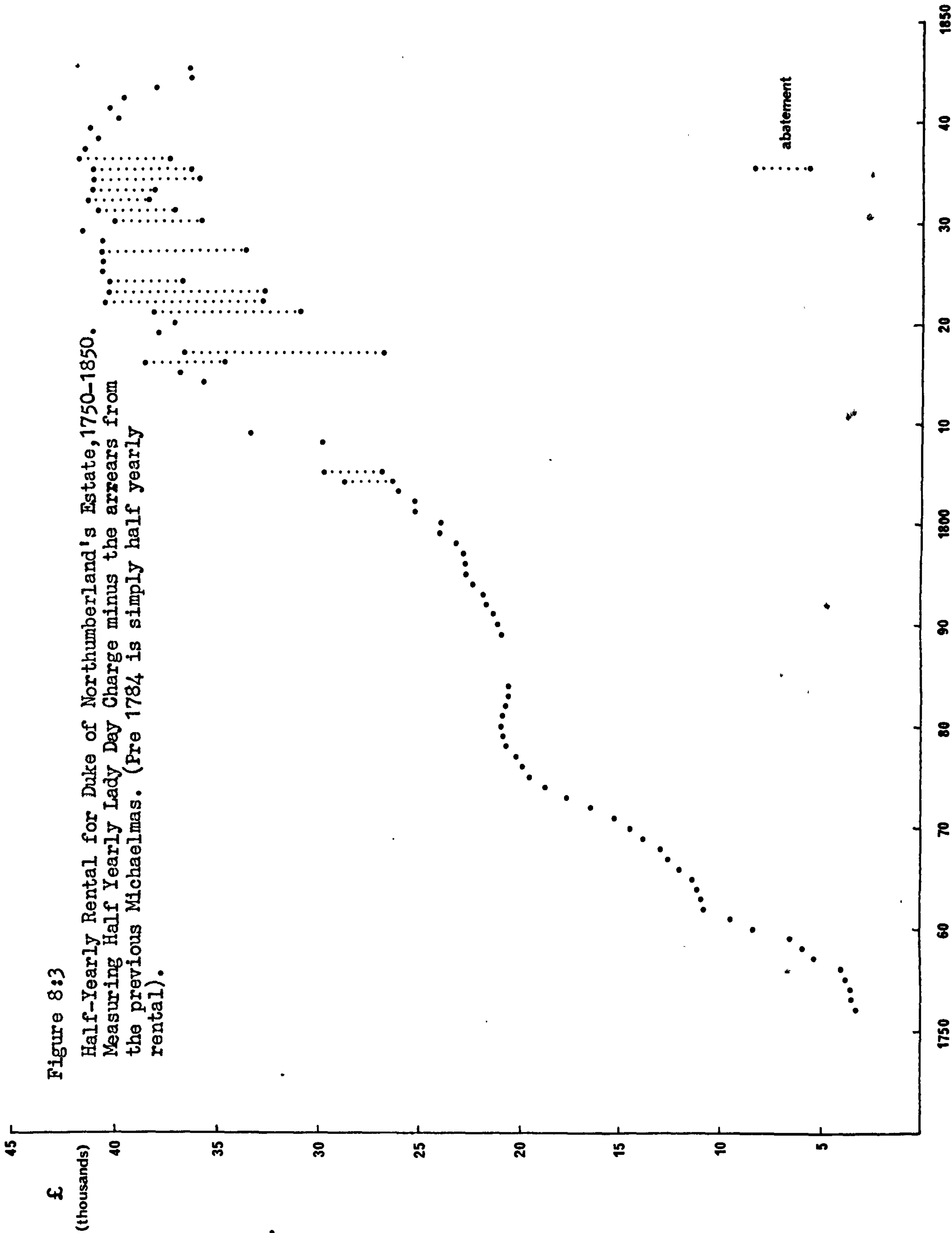
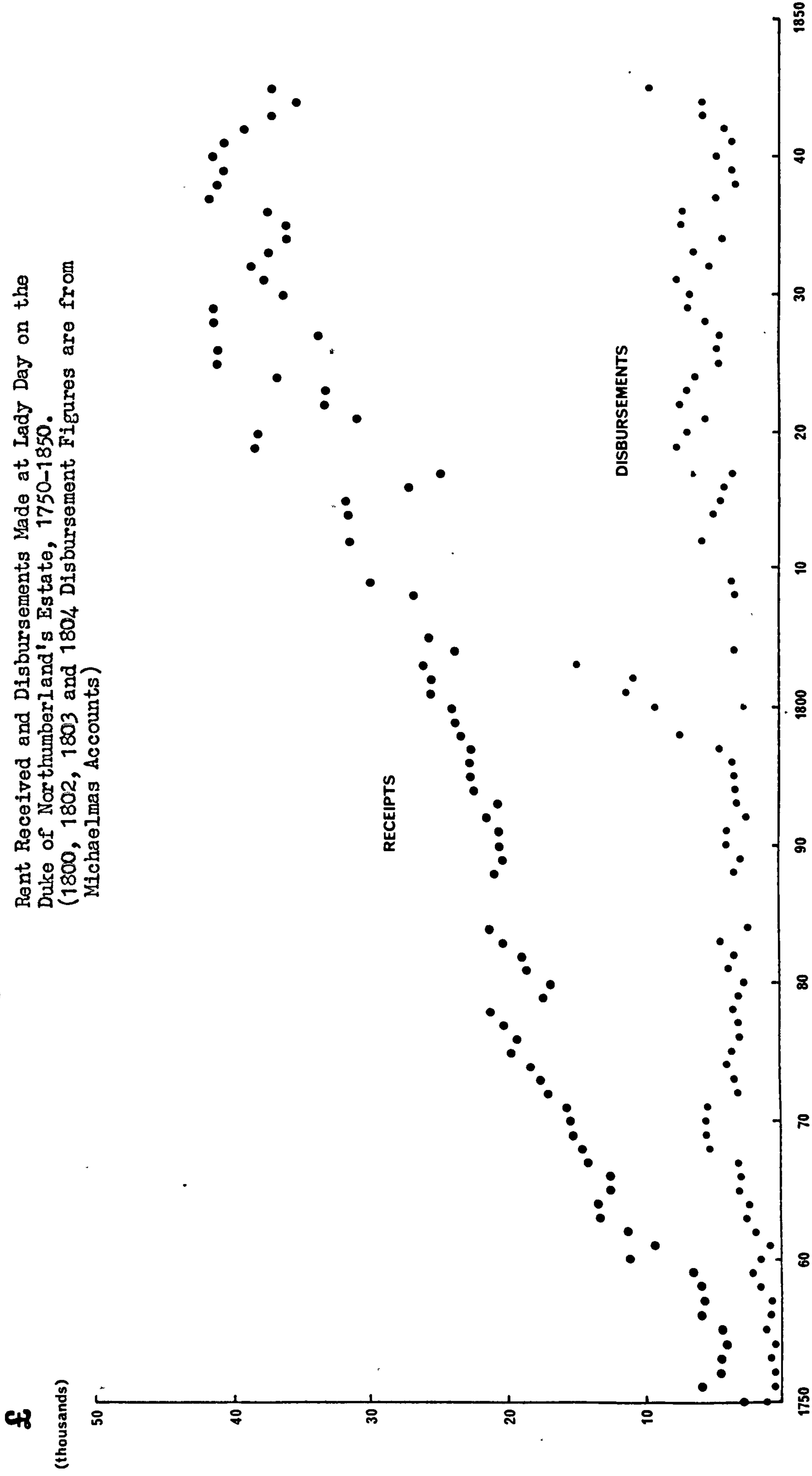


Figure 8:4

Rent Received and Disbursements Made at Lady Day on the Duke of Northumberland's Estate, 1750-1850.
(1800, 1802, 1803 and 1804 Disbursement Figures are from Michaelmas Accounts)



Source: AC/B/1.

Instead, the Duke curtailed estate expenditure, as is particularly well illustrated by the plummet from the high investment of the very early years of the 19th century and the years from 1804 onwards, occasioned by the Duke's edict of that year. The disbursement figures include every penny spent in connection with the Northumberland Estate, including, for example, the whole cost of administration, of the maintenance and repair of Alnwick Castle and of all legal expenses. These were no mean sums. One report says that the Duke spent £7,000 annually on the reconstruction of Alnwick Castle over 20 years, probably 1766-1786,²²⁴ and the Earl was apparently spending £100 each week on wages for workmen repairing the castle in 1763.²²⁵ The occasional breakdown of disbursement figures certainly shows large sums being spent on non-agricultural items. Michaelmas disbursements between 1769 and 1773 amounted to £27,135 of which at least £10,000 was spent on castle repairs, £3,650 on sinking collieries and £5,050 on purchasing land. Although total disbursements for Michaelmas 1821 and Lady Day 1822 amounted to £14,449, £4,933 of this had been spent on legal expenses.²²⁶ Consequently, it is not possible to determine what sort of investment was being made in agricultural improvement. This does not invalidate the conclusions that even total expenditure on the Estate was not high, and that investment was not allowed to keep pace with increased receipts when prolonged variation in receipt demanded some sort of action be taken, nor even during the War when money was most readily available.

Perhaps nothing illustrates the neglect into which the Duke of Northumberland's estate was allowed to lapse better than the revolution that took place in 1847, when the Fourth Duke eventually took the reins from his brother. Between 1847 and 1863, he spent £524,607 on roads,

224 Notes Relating to the Percy Estates in Northumberland.AC/Library/shelf 445, 187A/152 p.89.

225 N.C. Aug. 13th 1763.

226 AC/B/1.

bridges, buildings and draining alone on the Estate:²²⁷ during a similar period, 1829-1845, the Third Duke had spent less than £200,000 on absolutely everything connected with the Estate.²²⁸ Figure 8:5 shows the number of roods of drainage undertaken in various years before and after 1847 in Shilbottle Bailiwick, containing 5,500 acres of heavy land. The activity of the Fourth Duke, though partly a product of the widespread interest in draining of the 1840s, stands in stark contrast to the neglect of his predecessor. So great a change did not go unrecognized. In 1848, it was declared that

"If the proprietors would be more liberal and reasonable in their demands, it would encourage the occupiers to take greater pains in the cultivation of the soil, and the results would then be equally beneficial. Such a change has already commenced upon the estate of one of the largest proprietors in this district (I allude now to his Grace the Duke of Northumberland)... "²²⁹

Conclusion.

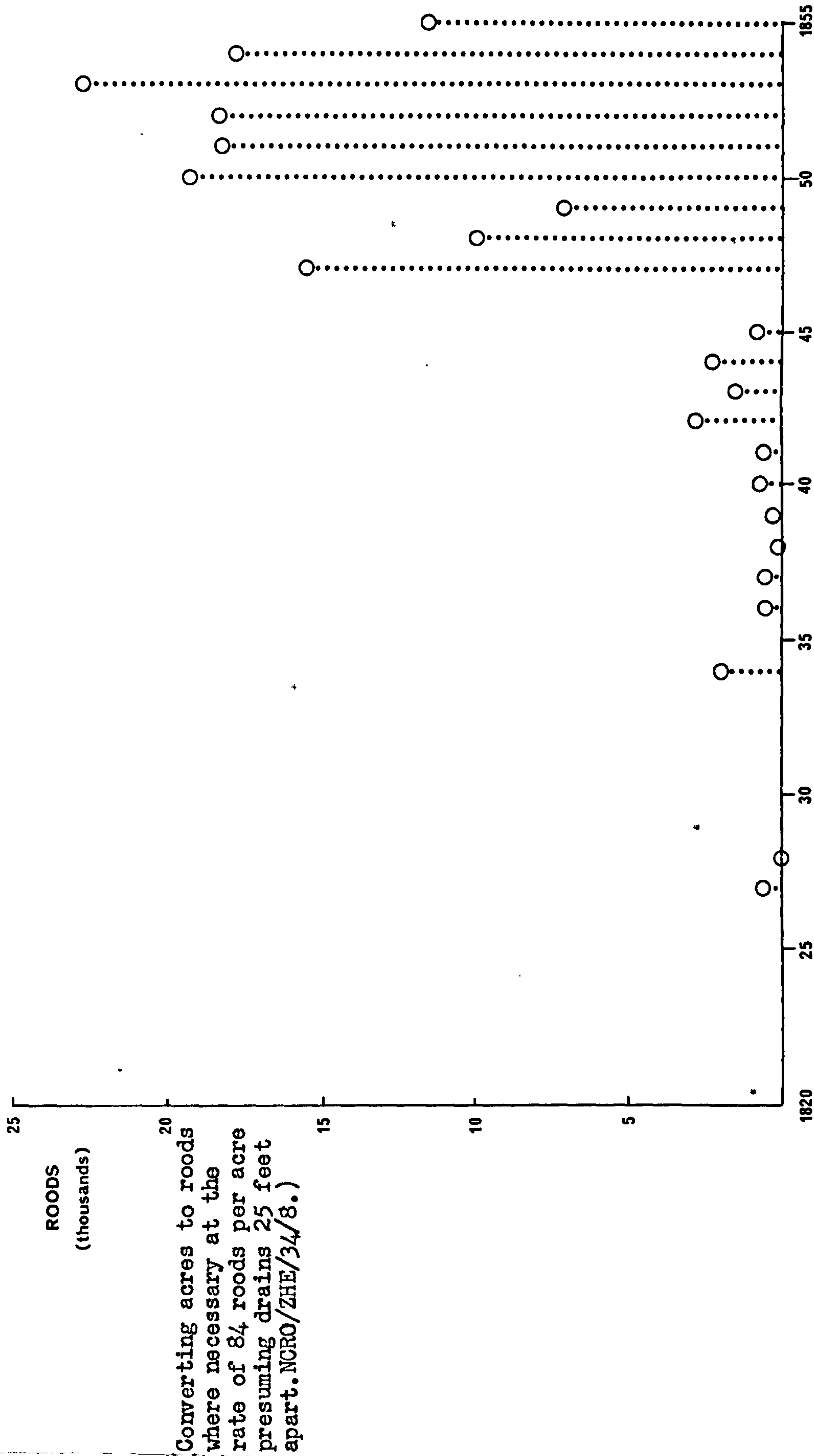
The examples of the Greenwich Hospital Estate and that of the Duke of Northumberland illustrate to what extent and in what ways agricultural improvement may have been hampered or encouraged by the type of estate administration. Were there much better information and were it more agricultural in nature, it is not improbable that the progress of agricultural improvement and innovation could be traced as accurately in terms of estate management as in any other way. As the information is, it gives indication rather than quantification of the forces at work. The indication is that the influence of the landlord's administration was a controlling factor, even of other factors. Corn

227 John Wilson, op.cit., p.9. NCRO/ZSW/Add.& Misc.

228 AC/B/1.

229 W. Stephenson to Newcastle Farmers' Club. N.C., June 9th 1848.

Figure 8:5
Drainage Executed on Shilbottle Bailiwick.



Source: State of Farms Report, 1827 - . AC, Middle Room, 4 large boxes on right.

prices, for example, became irrelevant under corn rent as did rent levels when abatements were traditional, or leases when there was no one to enforce them. It has been shown that it is not enough simply to differentiate between 'good' landlords and 'bad'. Sometimes the landlord who said he was improving was doing no such thing; who took an ostensible interest in agriculture was completely ineffectual; who spent most on improvements achieved least. No ideal estate administration, certain to produce or encourage agricultural improvement, has been discovered. In one example, corrupt bureaucracy produced improved agriculture, but that would hardly have been a reliable formula. The variables were as numerous as the aspects of the characters of landlords and land agents. An investigation of the influence of estate administration provides no easy answers: it illustrates the difficulties that make easy answers untenable. That is no small service. M^cCulloch wrote in 1837 that

"Considering the wonderful facilities of communication that exist in Great Britain, and the universal diffusion of information by means of the press, the slowness by which agricultural improvements make their way is not a little surprising ... It might, one should think, be reasonably enough supposed that the improved practices would now be much more rapidly diffused; but experience shows that this is not really the case... we should anticipate ten times more from the efforts of the landlords to enforce a better system, than from any improvement in the knowledge of the farmers. The former have it in their power... speedily to introduce a better system".²³⁰

He was correct in his realization of the problem and perhaps even in his solution, but his simplification of that solution was dangerously misleading.

230 J.R.M^cCulloch, op.cit., 1, pp.545-7.

IX

LAND TENURE AND LEASES

Most agricultural land in Northumberland was freehold,¹ and apart from a small percentage farmed by owner-occupiers, was let to tenants. Only in the far south-west of the County was any substantial acreage controlled in another manner, and there copyhold or customary holdings were common. It will be as well to deal immediately with the peculiar problems this form of tenure presented.

The system of land tenure in the south-west was in many ways a mediaeval anachronism perpetuated by the farmer's fervour to keep his independence and the lord's to maintain his rights. Some farms were held on normal short-term leasing arrangements with landlords, but others were held on ancient extended leases which gave the leasee the expense, but not the freedom of a freeholder, while it deprived the landlord of not only a realistic revenue, but of the obligation and incentive to spend money on the holding. The farm at Millhills, near Hexham, was held on a 99-year lease from the Greenwich Hospital whose delegates visited it in 1775 and reported "The Housing upon this Farm (as upon all the 99 Yrs Leases) is very mean & ruinous".² Other Hospital Reporters visited Whinnetley Farm, near Langley, in 1805, held on two leases for 1000 years expiring in 2626 and 2629. For this farm of nearly 400 acres plus allotments from Grindon Common, the Hospital received only the annual rent of £6.12.0 and a fine of £1.17.4 payable every 21 years. Consequently, the Reporters paid little attention to the farm, "the Hospital's interest in it being so very remote".³

1 Bailey and Culley, 1805, p.25.

2 Greenwich Hospital 1775 Report, PRO/ADM/79/57.

3 Greenwich Hospital 1805 Report, NCRO/NRO/467/42/2.

There was little practical difference in the terms of copyhold and customary tenure. Both rendered the estate liable to an ancient annual rent and to a fine of several times this rent upon the demise of either the lord of the manor or the holder. A heriot - normally the best horned beast on the farm - was also due on the death of the lord.⁴ By the 19th century, even the legal terminology was not exact, but where the copyhold seems to have differed was in requiring a payment at the death of the holder based not just on a multiplication of a trivial ancient rent, but on the improved value of the holding.⁵ Copyhold lands held of the Dean and Chapter of Durham had to pay fines based on this improved value at the extinction of every life or after a stated number of years. As late as 1856 it was said of such lands in County Durham that "no man having this species of property, and aware of the manner in which the fines or renewal are made to rise in proportion to all improvements, would think of laying out more money on his estate than he could not well avoid".⁶ In other parts of the County, manorial rights provided the excuse for a degree of ceremonial, for the assertion of privilege in petty matters or for extended legal wrangling, but only in the south-west do they appear to have been responsible for impeding agricultural progress.

In 1784, when landlords and farmers elsewhere were seeking to improve stock, Sir Edward Blackett's steward complained that the tenants at Ridley Hall had sold all their best cattle to avoid an expensive heriot,⁷ and even in the mid-19th century tenants were forced to resort to various semi-legal devices to reduce heriot payment from £20 to nearer

4 NCRO/ZBL/270/1.

5 James Donaldson, *Modern Agriculture*, 1796, 4, p.171.

6 Thomas Bell, 'A Report upon the Agriculture of the County of Durham', *J.R.A.S.E.*, 17, 1856, p.97.

7 George Bates to Sir Edward Blackett, Jan. 9th 1784. NCRO/ZBL/85/1.

£2.⁸ Landlords everywhere were keen to retain manorial rights, especially where it was thought mineral exploitation would be worthwhile, but in the south-west customary and copyhold tenure were an integral part of these rights and these too had to be maintained. When Ridley and Hotbank Commons were enclosed in the mid-18th century, the lord of the manor was reminded to make very sure that the Act did not change the customary estates to freehold.⁹ The enclosure of Haltwhistle Common and the re-allotment of dale lands "incapable of being cultivated to advantage to their proprietors by one half of their value"¹⁰ were delayed for nearly half a century by the intransigence of one Lady of the Manor anxious to keep up her rights.¹¹ Where exploitation leases had been granted to companies by the lord of the manor for mineral extraction from the commons before their division, that company was free to despoil allotted agricultural land without paying the usual compensation of double rental.¹² Where coal, ironstone and lime were to be found and where rights over them were to be leased, as was the case in the south-west, it was well worth maintaining manorial rights. The mining companies not only paid realistic rents, but also a percentage of turnover.¹³ Fines and heriots were worth little in comparison, but their exaction ensured manorial right to the greater profit. Table 9:1 gives an idea of the impact of various legal changes which substantially reduced the agricultural profit to be made from manorial rights after about 1850.

8 NCRO/ZBL/270/6.

9 Robert Douglas to Sir Edward Blackett, Jan. 17th 1752. NCRO/ZBL/85/1.

10 John Adamson to Mr Walters, Oct. 28th 1843. NCRO/ZAD/2.

11 Notes dated 1844, NCRO/ZAD/2; Haltwhistle Manor Roll, NCRO/ZAD/1

12 Alexander Watkins to John Clayton, June 29th 1857. NCRO/ZAD/1.

13 Epitome, 1842-55. NCRO/ZAD/1.

Table 9:1

Cash Account for Melkridge, Henshaw, Ridley and
Thorngraston Manors, 1829-1863

<u>Courts Held</u>	<u>Expenses</u>	<u>Receipts from Fines & Heriots</u>	<u>Profit</u>	<u>Loss</u>
1829,32,34,37	£ 41.13.10	£133.17.10	£ 92. 4.0.	-
1839,42	£ 93.16. 8	£209. 0.11	£115. 4.3.	-
1845,48	£147. 4.10	£263. 8. 1	£116. 3.3.	-
1848,49	£155. 5. 7	£279.16. 8	£124.11.1.	-
1849-54 (annually)	£167.16.11	£264. 4. 6	£ 96. 7.7.	-
1854-56 (annually)	£191.19. 6	£ 55.11. 3	-	£136. 8.3.
1857-63 (annually)	£276.10. 7	£131.14. 1	-	£144.16.6.

Source: NCRO/ZBL/271/3.

The result was a blatant disregard for the condition of agriculture. Where customary and copyhold tenure prevailed, with "every little saving being hoarded up for the payment of the eventual fine", the tenants were left "nothing for the expense of travelling to see improved modes of culture; to gain a knowledge of the management and profits of different breeds of stock; and to be convinced, by ocular proofs, that their own situations are capable of producing similar advantages: and even should they be half inclined to adopt a new practice, prudence whispers, that should the experiment fail, it would require the savings of many years to make good the deficiency. Customary tenures is [sic] allowed on all hands to be a great grievance and check to improvement".¹⁴ Such conditions crystallised the pattern of small farms handed down from father to son in which "strong attachments to ancient methods of husbandry have descended with them, and new improvements have been slowly countenanced".¹⁵ Only one instance of a lease being publicly

¹⁴ James Donaldson, op.cit., pp.173-4.

¹⁵ John Hodgson, Description of Northumberland, n.d., p.28.

auctioned by a landlord is known for the County. At a time when most landlords were taking some care over the choice of tenants, the Earl of Carlisle was auctioning the lease to a farm in Thirlwall in 1805.¹⁶

In the mid-18th century, the lease was little more than a signed undertaking guaranteeing the landlord his rent and the tenant the occupancy of a farm in return for that rent. The leases used on the Duke of Northumberland's estate in 1749 were largely financial contracts and virtually identical to those in use a century before.¹⁷ There is no doubt that on some estates this remained the principal function of a lease, but landlords seem to have been increasingly keen to incorporate conditions of husbandry into their leases. The Duke's tenant at Over Shiells in 1759 promised to take no more than three crops to one fallowing, to lay 5 fothers of lime on each fallow acre and to use all the manure on the farm.¹⁸ By 1770, the covenants required for the Duke's farm at Rennington were substantially more involved. The tenant had to retain all old grassland, to lay down with eight bushels of hayseeds and three pounds of white clover, to fallow a third of the tillage land each year and apply 60 bolls of lime per acre, to take no more than two corn crops before fallowing, to use all straw on the premises and to grow no mustard, flax or potatoes. Penalties were laid down for the breach of these covenants.¹⁹ By 1770, Sir Edward Blackett was using large printed forms detailing particularly the acreage to be in tillage and the percentage of that to be in fallow,²⁰ though exactly the same form was used for farms with scarcely any tillage.²¹ Such covenants were especially necessary where tenants held long leases.

16 P. & D., N49/56.

17 NCRO/ZHE/34/14.

18 AC/L/2/19.

19 NCRO/ZHE/34/14.

20 e.g. High Bradley lease, 1770. NCRO/ZBL/78.

21 e.g. Crookbank lease, 1783. NCRO/ZBL/78

Some tenants at Ford in 1763 were reported to the landlord as having "Put the farm into very bad Condition, but they have done neither less nor more, than What Your Other tenn^{ts} have done Especially those Whome the Country deem your principal tenn^{ts} but that is for no Other End, but to keep of Other people from takeing them, and to injure Your Honour off Your fortune."²² The same steward had earlier outlined what he expected of a lease. "Sir John I look Upon a lease to bind a Tennant to the articles specified therein, also on the Other hand, it Obliges the Landlord (by a Counter part lodg'd in the hand of the Tennant,) to such Conditions as he in the next place is to perform to the Tennant; now if the Tennants at West field, have not Ivaded their Lease, it is a little odd to me, Otherwise it must be such a lease as is different from What I Expect it is; but however be as it Will, they have ruin'd the farm for some time."²³ In September, he had had to ask Sir John whether the tenants were allowed to plough out their grassland for a way-going crop.²⁴ If the steward had no idea of the covenants, the tenants can hardly have been expected not to try to eliminate competition at the next letting by running down their farms. Nor, it was said, could good husbandry be expected from tenants on anything less than a seven-year lease with a few well-chosen and enforceable covenants, " ... then Your Hon may in a little time, be sure of having your Estate improved to its proper Value, but I'm sensible the methods You take of letting from Year, to Year, You ruin Your land, You ruin Your Tennants, and You Cannot in reallity be any gainer Your self, for a Tennant Will take no thought about his farm this Year that is not sure of Enjoying it the next".²⁵

22 Robert Burne to Sir John Delaval, Oct. 24th 1763. NCRO/2DE/4/52/2.

23 Robert Burne to Sir John Delaval, July 8th 1763. NCRO/2DE/4/52/10.

24 Robert Burne to Sir John Delaval, Sept. 24th 1763 and Sir John Delaval to Robert Burne, Oct. 6th 1763. NCRO/2DE/4/52/3-4.

25 Robert Burne to Sir John Delaval, July 4th 1763. NCRO/2DE/4/52/11.

Another steward on the same estate could remember cases of several Northumberland tenants who had delayed accepting covenants and had taken the opportunity to wreak havoc on their farms.²⁶ The new interest in the lease as a code of agriculture rather than a financial contract can be seen even in the farm letting advertisements in the local newspapers. From the 1770s these begin to contain requests not just for tenants who could make the farm pay the rent, but for good tenants who could benefit themselves, the landlord and the farm from an approved agricultural exploitation.²⁷

One small but practical obstacle discouraged some landlords from granting leases. They were expensive, particularly so when Stamp Duty was payable on them and there was, therefore, some inclination to reduce wordy leases or to replace them with informal agreements liable to less duty.²⁸ But at any time, the legal fees for preparing a new lease could be prohibitive. The lease for Chollerton Farm cost £27.6.4 to produce in 1820, a burden shared equally between landlord and tenant.²⁹

The advantage to the landlord of a lease with covenants was that his property then had a greater chance of maintaining or increasing its value. To the tenant, it gave security, an outline of what was and was not permitted and a statement of what contributions the landlord had agreed to make towards the farm. But in simple terms, the covenants were the landlord's security, the lease itself the tenant's. Arthur Young declared this mutual security to be almost totally responsible for improvements in English agriculture,³⁰ and Caird thought, much later,

26 Joseph Oxley to Sir John Delaval, Dec. 9th 1786. NCRO/2DE/4/16/65. See also N.C., March 24th 1787.

27 e.g. West Wideopen, Longbenton and Coat Yards, Netherwitton. N.C., Nov. 5th 1774.

28 Edward Grace to Sir John Delaval, Nov. 16th 1804, NCRO/2DE/4/60/2 and John Carr to Sir John Delaval, Feb. 6th 1807, NCRO/2DE/4/60/39.

29 NCRO/ZSW/199.

30 Arthur Young, Political Arithmetic, 1774, p.15.

that its absence was one of the greatest causes of waste in agriculture.³¹ In 1847, the Tyneside Agricultural Society heard that "if the landlords of Northumberland would exert themselves as they ought, the agriculture of the district would be in a different state to what it was; and its present condition was principally owing to 9-10ths of them refusing to grant leases".³² The lease was often looked upon with blind faith as the prerequisite par excellence of agricultural improvement. Some attention should therefore be paid to the conditions of leases and the observance of those conditions.

There is no doubt that the covenants written into leases increased in length, detail and complexity until at least the Napoleonic War period.³³ The agricultural conditions in a lease for a farm at Netherwitton in 1770 had been to use a 3 course rotation and to lime the fallow third, to keep all fences and buildings in repair and to plough no grassland. Equal space was occupied by covenants to win stones for highway repairs, grind corn at the lord's mill, buy coal at his pits, lead coals for the landlord, work 2 days on his dam and to pay 2 young fat hens as part of the rent each year.³⁴ By 1828, when a lease was granted for a neighbouring farm, all these latter provisions had disappeared entirely, the 3-course had become 4 with turnips occupying some fallow, the landlord had assumed responsibility for building and repairs, and the tenant was required only to lead.³⁵

Plans were often given detailing the exact crop to be grown in each field throughout the whole course of the lease.³⁶ It was argued

31 James Caird, *English Agriculture*, 1851, preface.

32 N.C., Oct. 8th 1847.

33 For an account of what a progressive lease would have been expected to contain see F.M., 20, 1819, pp.31-42, 424-35.

34 Longlee Farm, 1770. NCRO/ZTR/1/100-1.

35 Netherwitton Barns, 1828. NCRO/ZTR/1/105.

36 e.g. farms on the Ilderton estate, 1775-84. NCRO/NRO/678.

that detailed covenants were vital "not with the view of cramping an energetic tenant, but for the purpose of preventing the farm from being plundered and the soul taken out of it, in the event of its coming into the hands of a non-professional man"³⁷, and that such clauses, far from stinting enterprise in Northumberland, had encouraged the highest standard of agriculture.³⁸ Yet there were some who complained the restrictions were often a hindrance to agricultural advancement³⁹ and there was one would-be tenant in 1803 who advertised himself as "desirous of being exonerated from those restrictive Clauses in Leases which unnerve the Arm of Industry, and reduce Judgement and Ability to a Level with Ignorance and Prejudice. This he can expect only from the liberal and enlightened; and with such alone he wishes to treat."⁴⁰ By 1859, Christopher Bell felt that "The leases in use throughout the County seem to be the same handed down from past generations, abounding in restrictions and repetitions only calculated to puzzle the poor man anxious at once to fulfil his contract and obtain a return for his capital."⁴¹ That this could be so was amply evidenced in the notorious Stanwick affair when the Duke of Northumberland's prize-winning tenant in Yorkshire was forced to resign his lease because of totally impossible covenants.⁴² Lord Kames had spoken of the need for tenants to be fettered⁴³ and there is Northumberland evidence of tenants mistreating

37 Mr Ferguson to Newcastle Farmers' Club, Map 1859. NCRO/ZHE/34.

38 J.C.M^cCulloch, Statistical Account of the British Empire, 1837, 1, pp.454-5.

39 James Chrisp to Newcastle Farmers' Club, April 1st 1848. L.& P., Bolbec N630.6/2, p.2.

40 N.C., Sept. 24th 1803.

41 C.S. Bell, c.1859. NCRO/ZHE/34/19.

42 NCRO/ZHE/34.

43 Lord Kames, The Gentleman Farmer, 1776, p.406.

their farms towards the end of leases,⁴⁴ but it is perhaps doubtful whether lease covenants were generally regarded by either tenant or landlord as worth any more than the paper they were written on.

In 1784, several Flodden tenants refused to abide by even the rudimentary covenant not to plough grass land⁴⁵ and the same infringement occurred at Lydon West, in Earsdon, in 1795.⁴⁶ Matthew Culley had to threaten legal action against a Denton tenant in 1802⁴⁷ and George Silvertop against a Ponteland tenant in 1803⁴⁸ for the breaking of lease covenants. The Greenwich Hospital Commissioners agreed with their tenants that their leases were unworkable⁴⁹ and the reviewers of even Bailey and Culley's ideal lease for the improvement of Northumberland agriculture found much to criticise.⁵⁰ Newspaper apologies from tenants to landlords for the breaking of covenants were not uncommon,⁵¹ but perhaps the most damning indictment of the covenant system was not the numerous infringements of it, but the single admission by Sir John Delaval's steward that a memorandum altering an existing clause in a lease would be more satisfactory to both tenant and landlord than altering the clause itself.⁵² By the 19th century, leases generally contained pages of extraneous verbage, the products of legal minds for the benefit

44 Greenwich Hospital 1805 Report, Elrington Hall and Dilston. NCRO/NRO/467/42/2.

45 John Bryers to Sir John Delaval, July 13th 1784. NCRO/2DE/4/21/10.

46 John Bryers to Sir John Delaval, May 6th 1795. NCRO/2DE/4/22/38.

47 Matthew Culley to John Welch, May 9th 1802. NCRO/ZCU/6.

48 William Todd to John Potts, April 24th 1803. NCRO/ZCO/9/1.

49 Greenwich Hospital 1775 Report. PRO/ADM/79/57.

50 F.M., 1, 1800, p.315.

51 e.g. N.C., June 12th 1790.

52 John Bryers to Sir John Delaval, March 14th 1783. NCRO/2DE/4/20/39.

of other legal minds, not primarily of farm, tenant or landlord.⁵³

So abstruse was one lease in 1817 that the landlord eventually discovered that if he were to evict his tenant for non-payment of rent, the tenant would be due compensation in excess of the rent owed.⁵⁴

Covenants which related to the preservation of the landlord's game were sometimes included. A massive part of John Errington's leases was taken up with such provisos, but in this case largely to "quiet the mind of the said Lunatic which always appears to be extremely irritated upon seeing or hearing of any Person coming upon his Estate to kill Game."⁵⁵

It seems very likely that many covenants were no better read than the small print in a modern insurance policy and were probably not strictly observed by either landlord or tenant. Improved agriculture was obtained by co-operation and the realisation of mutual benefit - not by enforcement of inappropriate and often anachronistic, incomprehensible or impossible conditions. Donaldson reckoned that any lease actively preventing the sale of manure and the taking of two white crops in succession was quite sufficient to at least maintain a farm's fertility.⁵⁶

Security for the tenant lay in the length of lease. A tenant with a long lease, it was argued, was much more likely to invest money in farm improvements because he was certain to reap the benefits towards the end of his term. Not so the tenant on a short lease or none at all; he could never be certain of seeing returns for his expenditure on improvements and his best security lay in getting what he could from the farm while it was still in his possession and in making it as unattractive as possible to discourage any possible succession. A massive body of contemporary agricultural opinion was thoroughly convinced that the

53 James Chrisp to Newcastle Farmers' Club, April 1st 1848. L.& P., Bolbec N630.6/2, pp.3-4.

54 NCRO/CO/24.

55 NCRO/NRO/309/G/11.

56 James Donaldson, op.cit., 1795, 2, p.200.

shorter the lease the less improvement was likely. The marked improvement in Scottish farms under 19 year tacks was frequently compared with that on English farms, usually let without lease.⁵⁷ "Upon a review of the causes which have given to Northumberland, Durham and Scotland, the superiority in agriculture, they may, I conceive, be fairly traced to have principally originated from the granting of long leases."⁵⁸ But even within Northumberland distinction was made between the long leases and improvement typical in the north of the County and the short or uncertain tenure presumed responsible for lack of improvement in much of the rest of the County.⁵⁹ Yet there was some confused thinking over whether short leases produced bad tenants or whether bad tenants simply desired no more than short leases. In Scotland, the Forfeited Estates Commission had divided tenants into four classes by merit after the '45; the most deserving received forty-one year leases, the next twenty-one, then seven or nine year leases, and a fourth class of "poor and ignorant tenants" were to have no leases and were to be replaced as they died out by the sons of better farmers.⁶⁰ Most contemporaries argued that the short lease produced the poor farming,⁶¹ but long leases both cost more and were generally associated with large farms requiring considerable capital. It is likely that there was a pool of less wealthy tenantry unable to afford the luxury of long leases. Many landlords did not give leases, but sold them - almost by the yard - as a property distinct from the land. Certainly short leases were felt necessary at times of rapidly rising prices and rents when one steward advised the landlord to offer only "a very short Lease to give you the

57 Ibid., 1, p.426; J.C.M^cCulloch, op.cit., p.459; Robert Ritchie, The Farm Engineer, 1849, pp.77-8.

58 F.M., 12, 1811, p.235.

59 N.C., Sept. 23rd 1842 and Supplement, July 17th 1846.

60 J.E.Handley, Scottish Farming in the Eighteenth Century, 1953, p.242.

61 J.R.M^cCulloch, op.cit., p.177; Greenwich Hospital 1822 Report, PRO/ADM/79/60.

advantage of the change of times".⁶² It was also sometimes necessary to give short temporary leases to permit the re-arrangement of farms and tenants.⁶³

The difference between the cost of a long lease and that of a short was often considerable and those tenants who bought longer leases generally did so not to improve the farm, but to benefit from a constant rent level during times of rising rents. In 1774, Joseph Oxley reported despairingly to his landlord, "I had only one Tennant more Inquiring about Floddons but when I told him of a nine years lease he turned his hors abot and Like all the rest said no man would remove his family and Flock for so Short a Tack".⁶⁴ Similar demands from tenants for longer leases despite the increased rents were common throughout the second half of the 18th century,⁶⁵ and remaining portions of unexpired leases were bought and sold as pieces of valuable property.⁶⁶ The War period with its soaring rents meant that tenants were even more eager for long leases: the immediate post-War period, lacking these conditions, meant that tenants were "fearfull of engaging for a Term".⁶⁷ Leases on the Duke of Northumberland's estate had been for terms up to 21 years in the 1750s and 1760s, increasingly for 21-year terms in the 1770s and 1780s, but from then on many were for 5, 7 or 12 years. After 1795, the whole vast estate, with the exception of stock farms let for 12 years, was let from year to year throughout the first half of the 19th century.⁶⁸

62 John Carr to Lord Delaval, Nov.3rd 1807. NCRO/2DE/4/60/60.

63 Greenwich Hospital 1805 Report, West Land Ends Farm, Langley; NCRO/NRO/467/42/2. Whittonstall High Field; N.C., March 12th 1808.

64 Joseph Oxley to Sir John Delaval, March 9th 1774. NCRO/2DE/4/11/4.

65 Matthew Hall to Sir John Delaval, Jan.12th 1781; NCRO/2DE/4/54/12. Joseph Oxley to Sir John Delaval, March 28th 1781, NCRO/2DE/4/13/31; March 5th 1782, NCRO/2DE/4/14/13; May 30th 1784, NCRO/2DE/4/16/14. William Wilson's proposal, Feb. 4th 1793, NCRO/2DE/4/57/11.

66 e.g. N.C., April 24th 1762 and July 13th 1776.

67 William Todd to George Silvertop, Feb.7th 1817. NCRO/ZCO/9/1.

68 AC/L/2/14-24.

Figure 9:1 shows lease lengths at decade intervals on the Blackett Estates and confirms a picture of increasing length during the later 18th century, curtailed by the War and abruptly halted by tenant refusal to accept long leases after the War.

Occasionally leases known ambiguously as 'improving' leases were granted for long terms over which the rental increased as the tenant brought the farm into shape. When the farm had been left in really appalling condition, such leases sometimes bound the landlord to finance improvements based on the rental. Table 9:2 shows offers for such a scheme for Overacres Farm, Elsdon, in 1809 which had been left in a state of dilapidation by the outgoing tenant and could not be re-let normally.⁶⁹

Table 9:2

Proposals for an 'Improving' Lease for Overacres Farm,
Elsdon, Held of the Duke of Northumberland, 1809

The Duke insisted that he receive the old rent of £121.10s. for the first 7 years of the new lease, twice that for the second 7 and the whole bidding for the third 7 of a 21 year lease.

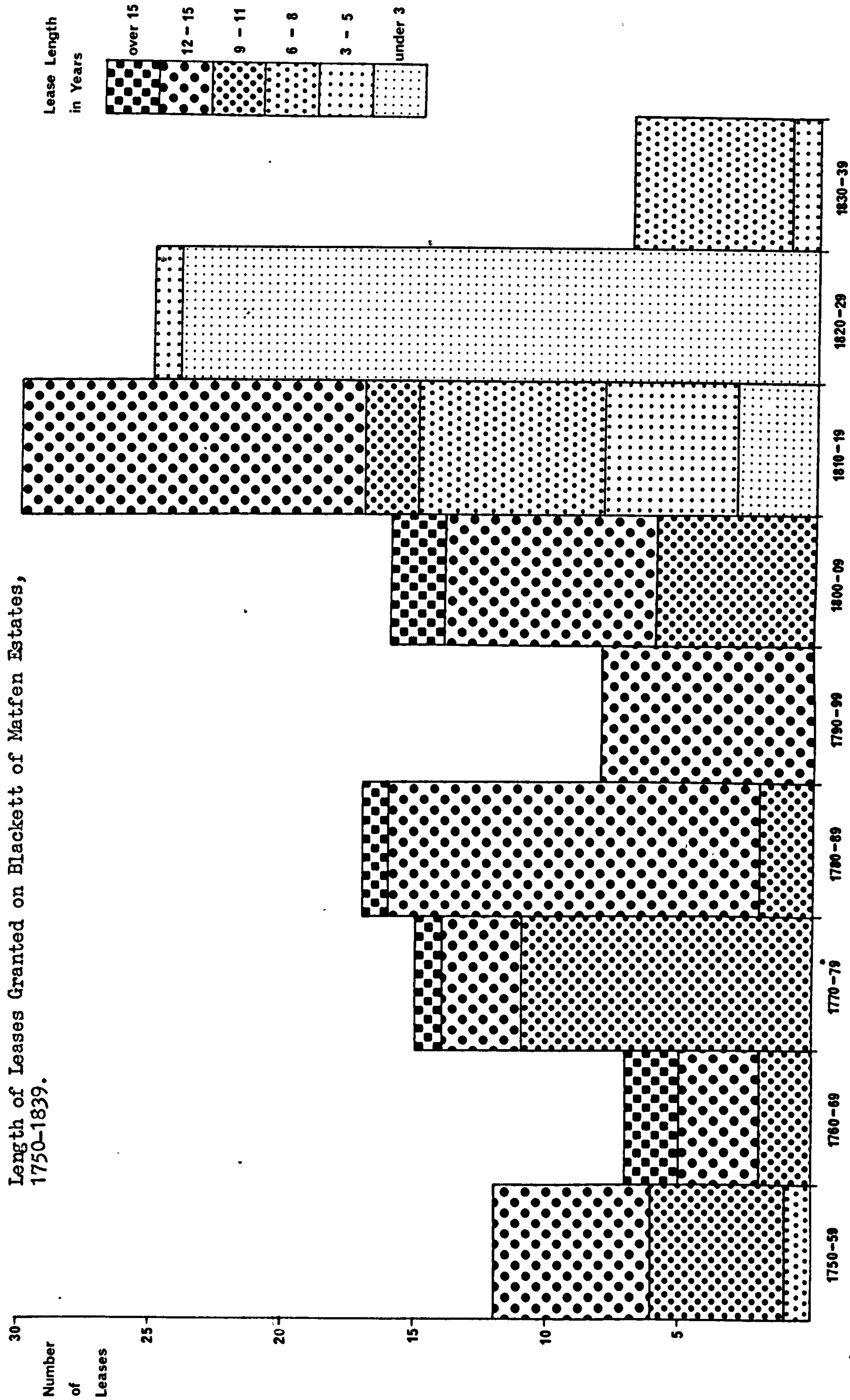
	<u>Bid Rent p.a.</u>	<u>To Spend on Improvements p.a.</u>	<u>Total to be Spent on Improvements.</u>
Proposal 1	£210	£88.10s. for 7 years	£ 619.10s.
Proposal 2	£220	£98.10s. for 7 years	£ 689.10s.
Proposal 3	£250	£129.10s. for 7 years £ 7. 0s. for 7 years	£ 948.10s.
Proposal 4	£285	£163.10s. for 7 years £ 42. 0s. for 7 years	£1438.10s.
Proposal 5	£370	£248.10s. for 7 years £127. 0s. for 7 years	£2628.10s.

Source: AC, Middle Room, 'Letters to His Grace, 1806-9', Letter No.457, March 22nd 1809.

⁶⁹ AC, Middle Room, 'Letters to His Grace, 1806-9', 484, June 17th 1809.

Figure 9:1

Length of Leases Granted on Blackett of Matfen Estates,
1750-1839.



Source: NCRO/ZBL/65.

But just because a tenant had no lease did not mean that he automatically lacked security. Many tenants at will had farmed the same holding for generations,⁷⁰ and the absence of a lease was often used as a ready excuse for poor management as was certainly the case on the Duke of Northumberland's farms (see p. 137).

What is more important than the hackneyed argument that short leases meant poor farming was the fact that leases of any length seem to have become increasingly rare in 19th century Northumberland. In 1847, Colbeck could not understand why "Although the advantages of long leases are yearly becoming more understood, a great proportion of the farms in this county are still let from year to year. It will indeed seem strange, that so absurd a custom should be persisted in, when the ruinous consequences are so apparent."⁷¹ In 1864, leases were said to have been uncommon in the area between the Wansbeck and the Aln and in the Rothbury district.⁷² Where leases were still granted at mid-century, covenants were but pale shadows of their predecessors and later in the century, farms in lower Coquetdale and Bamburgh which had previously been let on lease had come to be let yearly.⁷³ Sir Matthew Ridley gave 21 year leases with covenants but permission was readily obtained to deviate from these.⁷⁴ The same was true on the Cresswell Estate and the Beal Farm on the Haggerston Estate, which had been a model of advanced farming for at least a century, was "held on lease for 21 years without any restrictions whatever as to the mode of cropping, the landlord no doubt considering that a skilfull and responsible tenant was better able

70 Mark Hughes found that tenants stayed longer on farms of the Crewe Trustees held at will than on those of Earl Grey or the Greenwich Hospital let on 21-year leases. Mark Hughes, *Lead, Land and Coal as Sources of Landlord Income in Northumberland between 1700 and 1850*. Ph.D.Thesis, Durham University, 1963, p.215.

71 Thomas Colbeck, pp.422-3.

72 John Wilson, *Northern Farms and Farming*, 1864, p.8, NCRO/ZSW/Add.&Misc.; N.C., July 18th 1845.

73 N.C.H., 1893, 1, p.10; 1899, 5, p.16.

74 John Wilson, *op.cit.*, p.2. The same was true on the Cresswell Estate, *ibid.*, p.7.

to judge of the most beneficial way of farming the land, than he could secure by any of the customary directions on covenants".⁷⁵ So, in practice, such tenants were hardly in very different circumstances than those tenants at will of Sir Charles Monck who had no leases or covenants, but were expected to adopt a four-course rotation and not to plough out grassland.⁷⁶

By the mid 19th century, it was no longer normal for the bulk of the expense of improvements to be paid by the tenant. In 1816 it had been claimed that "A lease is only necessary... as a safeguard to a tenant who engages with a farm which requires considerable outlay before any emolument can be received..."⁷⁷ No doubt many such farms still existed in Northumberland, but financial responsibility had largely shifted from the tenant to the landlord.⁷⁸ It was the landlord who paid for new fences, buildings, for repairs and even threshing machines, who advanced money for drainage, and paid compensation for the tenants unexhausted improvements.⁷⁹ The tenant had come to hardly need the safeguard of a lease and the landlord had his in the power to evict at six months' notice a tenant deemed guilty of bad management. The age of the lease as primarily an agricultural rather than a legal device was probably over in Northumberland by 1850. Although lease covenants may have been less effectual than they pretended to be in guarding the landlord's rights, it is felt that at a period when much initiative and finance for improvement came from tenants rather than landlords, long leases were of significant importance in giving tenants the security necessary for their investment.

75 John Wilson, op.cit., p.11.

76 NCRO/ZMI/B41/7.

77 N.C., Sept.28th 1816.

78 James Chrisp to Newcastle Farmers' Club, 1859. NCRO/ZHE/34.

79 e.g. Whittonstall Farm lease, 1852. NCRO/ZCO/9/4.

X

AGRICULTURAL FINANCE

In a study of this nature it is possible to give but cursory consideration to the vital matter of the facility with which money to pay for improvements was available to landlord or tenant during the century after 1750. In particular, some attention will be paid to the availability of credit, for it would seem that the suspension of cash payments between 1797 and 1819 gave rise to a system of credit accounts in Scotland by which tenants used the security of their leases to obtain credit to improve their farms.¹ The extent to which this happened in England is a topic largely unexplored,² but there is evidence which suggests that the relationship between money and agricultural improvement in Northumberland deserves some closer examination.³

The important effect of credit and paper money on agriculture was frequently emphasised in the Board of Agriculture Report of 1816 on the Agricultural State of the Kingdom. Agricultural distress in both Durham and Northumberland was held to be directly caused by bankers restricting the circulation of their notes.⁴ It was argued that agricultural improvement was a direct product of credit availability; that the unfettered circulation of paper currency had not produced just high prices and wages, but also the means by which agricultural changes could be afforded, and that when the fetters were returned, such improvements would cease.⁵ For example, the return to the gold standard in 1819 and the consequent reduction of credit was acclaimed as the sole cause of

1 J.E.Handley, Scottish Farming in the Eighteenth Century, 1953, p.270.

2 G.E.Mingay, Introduction to Agricultural State of the Kingdom, 1816, reprinted 1970, p.xiv.

3 e.g. Matthew Culley to Arthur Young, pre-1820, NCRO/ZCU/44.

4 Evidence of Thomas Davison of Sedgefield, James Fenwick of Whitridge and John Wilson of Morpeth, Agricultural State of the Kingdom, 1816; pp.79-80, 235-7, 240.

5 Evidence of John Moseley of Norfolk, Agricultural State of the Kingdom, 1816, p.208; Joseph Lowe, The Present State of England, 1823, App'x.p.24.

agricultural difficulties in Cumberland in 1820.⁶

Much finance for agricultural operations probably came from the country banks, the first of which in the North East was the Old Bank, trading in Newcastle from about 1755.⁷ There were four banks in Newcastle by 1788, more in County Durham, and country branches at Berwick, Morpeth and North Shields by 1800.⁸ Contemporaries were not slow to acknowledge their agricultural importance. In 1802, Benjamin Bell wrote "country banks prove useful to agriculture, and thereby to the public, by enabling farmers to carry on improvements with more expedition and certainty than otherwise they could do. Were it not for the accommodation that farmers receive from bankers, improvements of the most important kind would frequently stop, and might never be entered on again".⁹

The formation of local banks with banking connections in London made the transmission of rent money from Northumberland to London both cheaper and easier. The Duke of Northumberland had been paying a charge of 1% to a Mr Isaacson for this service in the early 18th century,¹⁰ and the Greenwich Hospital was still paying a residual charge of $\frac{1}{2}$ %, though for no particular service, in 1817.¹¹ Local banks seem certainly to have increased the flow of money within agriculture. In 1749, Joseph Hutchinson, agent to Lord Tankerville, had standing instructions to receive only cash for rent due,¹² but by 1758, cash, Bank of England bills - payable after a stated time, such as 30 or 60 days, and carrying

6 F.M., 21, 1820, p.121.

7 Maberly Phillips, A History of Banks, Bankers and Banking, 1894, p.24.

8 Ibid., pp.34, 46.

9 Benjamin Bell, Essays on Agriculture, 1802, p.416.

10 List of Officers, 1748, A.C./P/2/1/n; P.Alcock to Henry Harpur, Oct. 17th 1749, A.C./Q/1/79.

11 1817 Visitation, PRO/ADM/79/59/438.

12 Joseph Hutchinson to Earl Tankerville, June 14th 1749.NCRO/Tankerville/Box 4/C/14 unsorted.

interest for that period - or those of the Newcastle Bank had become acceptable.¹³

The great difficulty with country banks was their unreliability. Small banks, issuing notes of low denomination and run by tradesmen rather than bankers were particularly shakey and open to criticism,¹⁴ though Northumberland seems to have had few of these. The least rumour of trouble seems to have frequently occasioned runs on local country banks. Newcastle banks had to stop payment in 1793 because of a run on gold in London,¹⁵ and fear of French invasion in 1797, leading to another local gold shortage, meant the banks again had to close their doors.¹⁶ The latter crisis had been predictable. In 1796 it was acknowledged that "The Banks here are Exceedingly afraid of the Country making a run on them by demanding gold for their notes - there never were so many notes on circulation since Newcastle Bank Notes were known".¹⁷ In such times of crisis, the normal remedy was for customers to lend support by continuing to accept notes rather than insisting on specie. Shops advertised that they would continue to take notes,¹⁸ and landlords rallied by accepting bank notes as rent.¹⁹ An indication of the importance of agriculture in banking operations may be gained from the plea of the Berwick branch of the Surtees and Burdon Bank to Sir John Delaval in 1796 to postpone his Rent Day as long as possible, a request that mystified the land agent as most of the money was to go straight

13 Joseph Hutchinson to Earl Tankerville, March 14th 1758.
NCRO/Tankerville/Box 4/C/14 unsorted.

14 N.C., Oct. 7th 1775.

15 Maberly Phillips, op.cit., p.53.

16 James Dormer and Robert Forster to Duke of Northumberland, Feb.23rd 1797. A.C./Middle Room/Letter Book 1796-1800.

17 Joseph Oxley to Sir John Delaval, April 18th 1796.NCRO/2DE/4/18.

18 e.g. N.C., March 18th 1797.

19 N.C., April 20th 1793; John Bailey to Earl Tankerville, March 15th 1797. NCRO/Tankerville/Box 1/D/3 unsorted.

back into the Berwick Bank.²⁰

Probably the greatest liability country banks had to endure was the regulation that they could have no more than six partners, a proviso which tended to restrict assets but to do nothing to prevent the printing and circulation of paper money. In Scotland, country banks could have as many partners as they wished and were very much more secure than their English counterparts. Between 1798 and 1818, no less than 230 English country banks went bankrupt: in Scotland during this period only the Ayr Bank suffered this fate.²¹ So superior was the Scottish system of financing agricultural operations that it was reckoned in 1822 that "If the same system of banking establishments which Scotland now enjoys were extended to England and Ireland, these countries, possessing such a superiority in soil and climate, would rise to a degree of prosperity hitherto unexampled".²² It was objected that Northumberland country banks required too much security and too rapid repayment to be of full use to the farmer,²³ and asserted in 1836 that even though Northumberland banks gave credit to farmers, they did not provide it with the alacrity of Scottish banks.²⁴ In fact, the proximity of Northumberland to Scotland probably allowed Northumberland farmers to use Scottish banking facilities. When the Bank of England prohibited the use of Scottish notes of under £5 denomination in 1828,²⁵ Northumberland protested by petition that seven-eighths of all rents were usually paid in Scottish notes and had been since the mid-18th century.²⁶

20 John Bryers to Sir John Delaval, Sept.25th 1796. NCRO/2DE/4/22/64.

21 T. Potter Macqueen, *The State of the Nation*, 1831, pp.22-3.

22 F.M., 23, 1822, p.191.

23 N.C., April 13th 1822.

24 Evidence of William Bell of Berwickshire, Report of House of Commons Committee on Agricultural Distress, 1836, p.58.

25 N.C., March 28th 1829.

26 Maberly, Phillips, op.cit., p.101.

It is possible to examine in more detail some of the financial arrangements of one Northumberland farmer, George Culley. In 1796, Culley had £2,000 at 3% in the Berwick Bank of Surtees and Burdon, but was anxious to transfer this to London to invest in Navy Bills at between 9 and 12%. Money for the purchase of an estate in 1794 had been obtained not from the bank, but from neighbouring farmers at 5% and it was because they did not wish rapid repayment that Culley sought Navy Bills. So wealthy were Glendale farmers at this time that Culley estimated he could easily borrow five or ten thousand pounds more at the same 5%.²⁷ In 1800 he laughed at the idea of money being short in Northumberland as long as the coal trade continued to prosper.²⁸ The following year, he spent £13,000 on an estate and paid for it not by withdrawing money from the Stocks, but by borrowing from local farmers.²⁹ At the same time, some farmers in the region, many of whom owed Culley money, were going bankrupt³⁰ and Culley issued instructions to his steward to accept payment only in cash or notes, not bills or drafts.³¹ In 1802, Surtees and Burdon of Berwick, with whom Culley banked, crashed from a cause not unusual among country banks, English country banks, unlike the Bank of England, had no obligation to declare their note circulation.³² Consequently, not all showed prudent reserve in the quantity issued. Surtees and Burdon were found to have issued £60,000 worth of notes not even recorded in their own books.³³ Culley

27 George Culley to William Thompson, Oct. 1796 - March 1797. NCRO/ZCU/31.

28 George Culley to John Welch, May 15th 1800. NCRO/ZCU/6.

29 George Culley to William Thompson, Oct. 30th 1801. NCRO/ZCU/31

30 George Culley to John Welch, June 28th and July 12th 1801. NCRO/ZCU/6.

31 George Culley to John Welch, May 26th 1801. NCRO/ZCU/6.

32 Joseph Lowe, op.cit., Appendix p.18. See also F.M., 10, 1809, p.484.

33 John Carr to Lord Delaval, April 19th 1806. NCRO/2DE/4/60/15.

and the whole agricultural neighbourhood lost money³⁴ and so scarce did money become in north Northumberland that agricultural labourers went unpaid,³⁵ and even Culley with all his property and wealth was forced to ask his creditors for time and mercy.³⁶ After this blow, Culley regarded no country bank as above board and even suspected many forgeries among Bank of England notes.³⁷ In 1808, credit was virtually unobtainable in Glendale,³⁸ and in 1810 Culley was making arrangements to borrow some thousands from the Darlington region, presumably as he had done in Glendale, from wealthy farmers rather than from financial institutions.³⁹

There are two main points of importance illustrated by what is known of Culley's financial transactions. The first is the unreliability of existing financial institutions. The second the reliance Culley placed on other farmers for the extension of credit. The second factor must emphasise the advantage in terms of possible agricultural improvement held by a farmer in a wealthy agricultural district over one in a poor area. The first must have made Northumberland farmers grateful for the proximity of Scottish finance, if only for Scottish notes. There is no evidence of a flow of Scottish bank credit across the Border, but even the provision of reliable notes was no small service to agriculture. In 1804, Brampton Fair in Cumberland was almost brought to a halt because of a shortage of both specie and paper.⁴⁰

34 Matthew Culley to John Welch, Oct. 5th 1803. NCRO/ZCU/6.

35 George Culley to John Welch, July 12th and 26th 1803. NCRO/ZCU/6.

36 George Culley to Mr Buckley, July 26th and Dec. 31st. 1803. NCRO/ZCU/6.

37 George Culley to John Welch, Aug. 1st 1803. NCRO/ZCU/6.

38 George Culley to John Irving, June 3rd 1808. NCRO/ZCU/31.

39 Matthew Culley to Thomas Peacock, April 3rd 1810. NCRO/ZCU/31.

40 N.C., June 2nd 1804.

Under such conditions, even the conduct of day-to-day farming operations must have been difficult, and the financing of agricultural improvement virtually impossible. Thus the use of Scottish notes in Northumberland agriculture was of considerable importance. It can also be seen that it is misleading to assume that the increased supply of paper money between 1797 and 1819 and the inflation it produced, automatically and uniformly increased the financial capability of farmers to improve. While the period produced an increased supply of currency conducive to this end, it also engendered severe financial fluctuations which were certainly not. Of more importance might be the alternative opportunities to agriculture for investment by agriculturists. It is fascinating that Culley was borrowing very large sums of money from other farmers, ostensibly to buy property, but in practical terms to invest in Government stock. It is perhaps more realistic to see investment in agricultural improvement to have been not so much a factor of the availability of credit as of the attractiveness of investment elsewhere. Hence, while money was often easily obtainable in the early 19th century, interest rates in non-agricultural fields were high and tempted investment. With a return to the gold standard came lower interest rates which made agriculture comparatively more attractive as a field for investment. In 1818, for example, an advertisement for Spital Farm near Allendale pointed out that "On Account of the trifling Interest the Banks at present allow, Gentlemen will find the above Farm a very desirable Purchase".⁴¹ Regretably, it is beyond the scope of this study to pursue the problem further, though the wherewithal to improve agriculture was as essential a factor in the development of that agriculture and presumably in the process of innovation diffusion as any other.

41 N.C., March 21st 1818.

XI

TITHES

Of all the taxes paid by agriculture, the tithe was the most objectionable, first because it was easily the largest, amounting to perhaps one third of the rent,¹ and secondly because it was felt to be a tax on agricultural improvement in that it bore most heavily on those whose yields were greatest and expenditure heaviest.² The main objection was to tithe taken in kind, for it meant continuous re-assessment of the tax and uncertainty over the sum to be forfeited. It was argued in 1796 that "the payment of tithes in kind operates more against the spirited improver than against the slovenly and indolent. Tithes, as the law now stands, cannot be considered so much the tenth of the natural produce of the soil as a tenth of the capital employed by the farmer in its cultivation and improvement".³ This was irrefutable and invidious contrasts were made between the state of agricultural improvement in England and that in Scotland, where tithe had long since been converted to a fixed money payment.⁴

In fact, Northumberland tithes were very rarely actually collected in kind, though they were assessed that way. Only 13 of the 73 Northumberland parishes were rectories and the vast majority of tithes were in the hands of laymen and regarded as a form of property from which to extract profit.⁵ The actual income of clergymen was most

1 J.R.M^cCulloch, Statistical Account of the British Empire, 1837, 1, p.460; Seymour Bell's Notes, c.1860, NCRO/ZHE/34/18.

2 H.C.Prince, 'The Tithe Surveys of the Mid-Nineteenth Century', Ag.H.R., 7, 1, 1959, p.15.

3 James Donaldson, Modern Agriculture, 1796, 4, p.122.

4 Ibid., p.114.

5 John Hodgson, Description of Northumberland, n.d., p.28.

commonly derived solely from the exaction of small tithes, a matter of little economic importance to agriculture, but which did nothing to improve relations between Church and Farm.⁶ The normal method of collecting corn tithes in the County was for the tithe proprietors to appoint valuers to assess the crop. This valuation would normally be accepted by the farmer and paid in cash, but if refused, the valuers were to take the tithe at the price refused.⁷ It is difficult to do justice to the antagonism felt by farmers towards tithe assessed in kind. Bailey and Culley devoted the whole of the section on 'Obstacles to Improvement' in the County Agricultural Report to the iniquities of the system and particularly to its inevitable consequences in hindering agricultural progress.⁸ In 1800, George Culley stressed both this point and the uncertainty of the payment in a letter to John Welch. "My Bro^r is charged this year 6/- per acre at Wark, for all his hay tithe, & you never saw half so bad Crop at Wark of Hay. Some pay 10/- - 11/- per acre for Clover tithe, nay I was told one man was charged 14/- per acre. There is no knowing what Tithes may come to. The more industrious you are, the more you are punished in the Tithe way? And the more you improve your farm, & Stock etc etc the more you are taxed in the Tithe way! There is no other Tax so grievous as the Tax of Tithes".⁹ An earlier comment from John Bailey confirms in splendid rhetoric the frustration of those trying to modernise an agricultural system shackled to an outmoded and damaging system of tribute. Referring to a Vicar of Ilderton particularly demanding in the annual tithe battle, Bailey wrote

6 Seymour Bell's Notes, c.1860, NCRO/ZHE/34/18.

7 1805 Greenwich Hospital Report, NCRO/NRO/467/42/2/171.

8 Bailey and Culley, 1805, pp.178-9

9 George Culley to John Welch, July 30th 1800. NCRO/ZCU/6.

"... he is so very a Priest, he will do all the mischief he can, - I wish the Legislature would curb those black Cattle, and confine them within the Pale of moderation; that they might no longer be scare Crows to Industry and improvement".¹⁰

As so many Northumberland tithes were in lay hands and frequently those of the actual landlords of the farms assessed, it was possible and to the advantage of both tenant and landlord to convert the annual tithe into a fixed rent charge and to let the farm tithe free. It was argued in 1831 that this policy on the Duke of Northumberland's Estates would "not only save the Agency, or per Centage, on valuing & collecting; but be less objectionable to the tenants, as avoiding the excitement of a New Valuation, & fresh bargains every yaer - so that, in a little time, the tithes will be forgot, & the occupiers feel the quiet of tithe free Lands".¹¹ The Tithe Commutation Act of 1836 introduced a fixed charge, but one based on prices over the preceding seven years. While this was an immense advance over tithe assessed in kind, considerable feeling still remained that maximum improvement would not be produced until the tenant knew with absolute certainty the extent of his overheads. In 1850, for example, Sir Walter Riddell insisted that his farms be let at an inclusive and certain rent, not at rent plus tithe rent charge "as I wish the tenant in no case to be concerned in the Rent Charge, its rise or fall, but the Farms all let for what they are fairly worth, clear of rent charge; and so the rent should be in a round sum... "¹²

There is some evidence that payment of tithe was a factor powerful enough in certain circumstances to determine land use. George Culley

10 John Bailey to Lord Tankerville, July 21st 1784. NCRO/Tankerville Box 5/C unsorted.

11 Audit Accounts, Michaelmas, 1831. AC/Middle Room/B/1.

12 Sir Walter Riddell to George Tate, 1850. NCRO/ZSW/337.

thought that if the Vicar of Norham's effort to tithe turnips were successful, the growing of turnips would rapidly cease in that parish.¹³ In general it was supposed that the exaction of corn tithe - by far the heaviest - had the effect of keeping land in grass that could have been growing corn. It was alleged in 1795 that not only did tithe cramp the genius of the farmer but also prevented many thousands of acres of Northumberland from coming under the plough.¹⁴ Culley knew farmers in Glendale who, because of tithe, refused to break up their grassland and one who had even bound his son to the same principle.¹⁵ Numerous newspaper advertisements for farms to let proclaimed that the land could be used not only for grazing, but "for Husbandry, as it is clear of all Manner of Tithe",¹⁶ or that lands were "Tythe Free, so long as they continue in Pasture".¹⁷

Perhaps the greatest influence tithes exerted over land use concerned the arable exploitation of virgin moorland. A statute of 1548, in order to encourage cultivation of wastes, had allowed such land to remain tithe free for the first seven years of exploitation when the profits of the first year's crop did not repay the initial costs of preparing the land.¹⁸ It is not known to what extent local farmers took advantage of the law; it would seem from litigation such action provoked that tithe owners often interpreted it rather less liberally. Certainly the law was invoked to make more profitable the growing of corn on Morpeth Common in 1774,¹⁹ and an amazing case was heard in 1780 concerning Corbridge Common. Once the Common had been enclosed and

13 George Culley to Rev. Watkins, Sept. 23rd 1795. NCRO/ZCU/20

14 N.C., Aug. 15th 1795.

15 Copy reply to Board of Agriculture circular, 1800. NCRO/ZCU/2.

16 Beuckley Farm, St Johnlee, N.C., Feb. 26th 1763. See also Hallington, N.C., Jan. 27th 1762 and Great Swinburn, Chollerton, N.C., July 25th 1778.

17 Scotts Hall and Meadows, Allendale, N.D., April 18th 1807.

18 F.M., 21, 1820, pp. 476-7.

19 N.C., Aug. 6th 1774.

allotted, the farmers forsook their old Townfield arable, which they began to lay down to grass, and grew their corn on what had been the Common, some after paring, burning and liming and some without any preparation. It was argued that the new arable had involved no real expense in the improving and that its crops were as good as, and some better than, those the old infield land had produced.²⁰ The outcome of the case is not known, but it would seem that this loophole in the tithe law could perhaps only be used to effect a change in land use where a strong urban body could unite to resist the claims of the tithe proprietor, for it was alleged that "The Constant usage of this Country has been for the Commons to pay Tithe Corn immediately upon Cultivation".²¹ Certainly the evidence that tithes had as real an influence on agriculture as to affect actual land use lends considerable weight to the contemporary clamour that they were a significant, though scarcely calculable, obstacle to agricultural improvement, and makes understandable the unanimous feeling of relief evident among agriculturists upon the long-delayed passing of the Tithe Commutation Act.

20 Case dated Sept. 1780, NCRO/NRO/390/G/11.

21 Ibid.

XII

THE AGRICULTURAL POPULATION

While this study does not provide scope for a thorough investigation of demographic factors, it has been thought worthwhile to look at certain aspects of the Northumberland population between 1750 and 1850. The first of these is the importance of the local population as a market for agricultural produce: the second the role the agricultural population played in the creation of that produce, particularly in changing and improving the methods of its production.

The diet of the Northumberland labourer seems to have been very different from the wheaten bread, cheese and beer or cider common in the South. A soldier sampling it at Felton Bridge in 1745 described a typical breakfast as "Hasty-pudding, made of Oatmeal and Water boiled together, till it comes to the Consistence of Paste, which some eat with Beer, Nutmeg, and Sugar; others with Milk; then 'tis tolerable. Their Bread was very bad and black: Oat-cakes are here also in Fashion".¹ By 1795, the diet had become little more attractive and consisted of various combinations of boiled oats, barley, peas and potatoes. Savoury soups were popular and bread was made from either barley or oats.² When the Duke of Portland sought to know in 1795 whether rice, barley or oats were being used as substitutes for the much more expensive wheat, only 2 of the 16 parishes to send replies mentioned any demand at all for wheat.³ While wheaten bread seems to have been well established in Durham by this time,⁴ it was only just becoming so in Northumberland.

1 A Volunteer, Journey Through Part of England and Scotland Along with the Army, 1747, p.45.

2 Sir Frederick Eden, State of the Poor, 1795, p.117.

3 PRO/HO/42/55/342.

4 A. Mowbray, A.A., 24, 1795, p.97.

"The labouring part of the community in this county, live upon bread made of grey peas and barley, in the proportion of two parts of barley to one of pease; and, though coarse, is a most hardy food and wholesome: though I own that wheaten bread is more used than formerly."⁵

It is not suggested that the demand for barley and oats explains the dominance of these two crops over wheat in the 1801 Crop Returns: it is more likely that the labourers' diet reflected a situation in which wheat had played an even less significant role in Northumberland cropping, particularly when wages were generally paid in kind and were traditionally composed of high proportions of barley and oats. The whole northern sector of the County exported grain through such ports as Alnmouth,⁶ Budle⁷ and Berwick,⁸ and Culley referred to the whole area as an "exporting district".⁹ This being so, it must mean that nearly all wheat grown in Northumberland, at least until about 1800, was exported. Even when a local market did exist for a product, as it did in the south-east for rye where it was said "the pit men all eat bread made from lean meslin [maslin was a mixture of rye and wheat], or rye; because... it prevents that costiveness which their very hard work and prodigious perspiration occasions",¹⁰ the Crop Returns of 1801 show that despite this demand, hardly any rye was grown to meet it.¹¹ Instead, supplies were shipped from the Baltic, and Newcastle

5 George Culley, A.A., 24, 1795, p.107.

6 An advertisement for a farm at Amble described it as being "between 3 and 4 Miles from Alemouth, where most of the Grain of the Neighbourhood is shipped". N.C., Aug.10th 1805.

7 The farms of Outchester, Spindleston and Glororum were said to be "very pleasantly & delightfully situated near to the German Sea, a part of which called Budle Bay is very convenient for shipping their produce". 1775 Greenwich Hospital Visitation Report, PRO/ADM/79/57.

8 "The grains produced in this part of the county, viz within the reach of the port of Berwick upon Tweed, produces [sic] every year, over the consumption of the town and its vicinity, a considerable quantity of grain for exportation; on an average of years, about 50,000 quarters." Rev. Dr Thorpe, A.A., 24, 1795, p.99.

9 A.A., 24, 1795, p.106. See also 14, 1790, p.254.

10 George Culley, A.A., 21, 1793, p.228.

11 See also Bailey and Culley, 1805, pp.79-80.

became a port of importation for corn.¹² The dry, light soils suited to the growth of rye were also appropriate to the more profitable and less exhausting turnip crop. As the Northumberland labourers' predilection for barley and oats was a relic of times when wheat had not been extensively grown, so the pitmen's appetite for rye bread was as much evidence of an older system of land use as the numerous instances of 'rye hill' among place names in Northumberland.

While James Caird had written of mid-nineteenth century England that "probably not more than one-third of the people in this country consumed animal food more than once a week",¹³ the statement would not have been true of Northumberland. It would seem that the Northumberland labourer, especially in the industrial areas of the south-east, consumed a great deal of meat even in the 18th century. The demand for butcher's meat in Northumberland in 1800 made it sell dearer than anywhere else in England, save Smithfield,¹⁴ and Culley claimed "the above dearness in mine & other peoples opinion, arises from the Coal Trade entirely",¹⁵ while the shipping was also hailed as the "primum Mobile" of meat production.¹⁶ Even Culley was willing to admit that the New Leicester sheep, of immense importance in the progress of Northumberland agriculture, though bred primarily for meat, produced decidedly over-fat and inferior mutton. "To weak appetites it is not so inviting as the lean mutton, but it finds a ready market amongst the manufacturing and laborious part of the community" who apparently "cut off a part of the fattest, with which which they make suet-dumplings, or bread paste with it for pies, etc and

12 A.A., 3, 1785, p.463.

13 James Caird, 'General View of British Agriculture', J.R.A.S.E., 2nd series, 14, 1878, p.289.

14 George Culley to Warren Hastings, May 23rd 1800. EM/Add.Mss/29177/ folio 272.

15 George Culley to John Welch, May 15th 1800. NCRO/ZCU/6.

16 George Culley to John Welch, May 21st 1800. NCRO/ZCU/6.

not infrequently make sea or boiled pies of the fattest parts."¹⁷

Leicester meat was locally known as 'coal-heaver's mutton' "adapted to support the exertions of those laborious classes... of Coal-heavers, Keelman, and Pitmen, about Newcastle."¹⁸ It would seem likely that this voracious appetite for quantity rather than quality of meat, supported by high industrial wages, was at least partly responsible for the profitability Northumberland farmers found in livestock production and thus for the encouragement of that branch of agricultural industry.

There is little doubt that the rural labourer was financially worse off than his urban counterpart. Eden supposed an agricultural wage in south Northumberland in 1794 to have been worth about 12/- a week, while that of pitmen averaged 16/- and that of keelmen 17/6.¹⁹ In Durham in 1790, pitmen, miners and keelmen were said to earn 14/- a week "but they are generally so extravagant, that their savings for their families come to little or nothing".²⁰ Close proximity to higher industrial wages had the effect of raising agricultural wages.²¹ In Northumberland, high agricultural wages were attributed to "the very close facility to the prosperous collieries in the southern part of the county, to the collieries of the county of Durham, to the great extent of shipping upon our coasts, and to the consequent great drain and demand for labour which took place and which carried off from the agricultural districts all the superfluous labour which, if allowed to remain on the spot, would weigh down the agricultural labourers".²² A Durham farmer had

17 George Culley, *Observations on Livestock*, 1801, p.108. See also 'A Northumberland Farmer', *F.M.*, 5, 1804, p.310.

18 'A Breeded of the Coal-Heaver's Mutton', *F.M.*, 4, 1803, p.166. See also 'A Newcastle Coalheaver', 4, 1803, pp.400-1.

19 Sir Frederick Eden, *op.cit.*, 1795, p.117.

20 David Davies, *The Case of the Labourers in Husbandry*, 1795, p.157.

21 The tendency of industrial areas to produce increased agricultural wages in nearby rural areas is noted in Adam Murray, *Agriculture of Warwickshire*, 1815, p.167; and in S.B.L. Druce, *The alteration in the Distribution of the Agricultural Population of England and Wales*, *J.R.A.S.E.*, 2nd series, 21, 1885, p.109.

22 Ralph Carr to the Northumberland Agricultural Society. *N.C.* Oct. 11th 1844.

complained in 1791, "I am situated in the centre, betwixt two navigable rivers, and it is with great difficulty I can get a man to turn his hand to husbandry, as they can make so much greater wages, in a few hours, at either of the ports, by casting of coals into ships and the ballast out".²³ In fact, it would seem that some agricultural labourers working near industrial areas were required to do industrial work at agricultural wages. Not surprisingly, they objected, and did not stay long at Hartley South Farm in the 1780s when they were expected to "goe at the Waggons when Callt on".²⁴ The situation remained the same even in 1850 when a report stated that "the Wages of Agricultural Labourers are higher in Northumberland, more especially in the Southern Districts, than in many other parts of the Kingdom. This circumstance must be considered as mainly due to the large employment furnished by the Working of Coal Mines".²⁵

It is hard to estimate how much Northumberland agricultural labourers were paid. Certainly they were among the best remunerated farm workers in the country,²⁶ but as most 18th century wages were paid in kind, it is difficult to judge their comparative value. Bailey and Culley estimated the annual value of the grain, wool, potatoes, coal cottage and keep of cow, pig and hens paid to a Northumberland Hind²⁷ to be about £18 or £19,²⁸ added to which would be whatever his

23 Stephen Watson of Oleadon, near Sunderland, A.A., 15, 1791, pp.490-1.

24 William Noble to Sir John Delaval, Jan. 15th 1781. NCRO/2DE/4/47/3. See also John Bryers to Sir John Delaval, Jan.17th and March 25th 1783. NCRO/2DE/4/20/32 and 41.

25 'Caloulations on Farm Produce, 1850', by Hugh Taylor. AC/N/3/13.

26 A.L. Bowley, 'The Statistics of Wages in the United Kingdom during the past Hundred Years', Journal of the Royal Statistical Society, 61, 1898, p.47.

27 While 'hind' was and still is a generic term for any labourer employed in agriculture, it was also used to distinguish from the day labourer the man contracted by a farmer to work for and to be paid for the whole year. It is in this sense that the word is used here.

28 Bailey and Culley, 1805, p.164.

bondager²⁹ and his children might earn.³⁰ John Grey had valued the typical hind's wage at £38.18.0 in 1831,³¹ but the calculation naturally depended very much on the price of agricultural produce. It seems that many hinds found themselves in a position strong enough to bargain with employers³² and that some were considerable capitalists in their own right at an early date. "A Hind's Wages may amount to about fifty pounds per ann but little of this paid in Money, mostly in sheep grazing. N.B. This is to be understood of a Hind, who has two or three Servans & perhaps 1000 sheep."³³ It may be that high wages for labourers provided the opportunity for some to prosper within agriculture and the inspiration and wherewithal by which others sought prosperity elsewhere.

Although payment in kind continued well into the 20th century in Northumberland,³⁴ it had declined in popularity long before. In the Bamburgh region it had almost disappeared by the 1870s,³⁵ but seems to have first given way to a money wage in the south of the County.³⁶ A report of 1850 declared "that in the Northern part of Northumberland, no Farm Labourer is paid entirely in Money; whilst on the Clay Soils of the South Eastern part of the County, Money Wages are universal".³⁷ It may well have been that wages in kind cushioned the hind from the

29 Part of the hind's contract was to supply a 'bondager', a woman bound to work at a fixed daily wage whenever called upon by the farmer.

30 Kay calculated the average earnings of an unmarried labourer to be £25 p.a. while those of a man with a wife and seven children might be expected to be over £50. James Kay, *Journal of the Statistical Society*, 1, 1838, p.181.

31 John Grey, p.186.

32 George Culley to John Welch, April 30th 1802, NCRO/ZCU/6.

33 'A Calculation for the Improvement of 78 Acres of Crookham Moor', August 1762. NCRO/2DE/19/4.

34 See J.R.Wood, Notes on 'A Year's Management of a Half-Bred Flock', 1930, NCRO/NRO/302/78; and D.A. Gilchrist, *Journal of the Newcastle Farmers' Club*, 1923, p.64.

35 Northumberland County History, 1895, 1, p.11.

36 N.C., May 16th 1845.

37 'Calculations on Farm Produce, 1850', by Hugh Taylor. AC/N/3/13.

privations high food prices might otherwise have caused,³⁸ but they also meant he was unable to benefit from low prices. The War had certainly made labourers scarce and dear,³⁹ but it is unlikely that they were ever plentiful and cheap⁴⁰ and they did not become so after 1815. What did occur was a growing dissatisfaction with the status of being a hind, dissatisfaction shown in the pressure for money wages rather than payment in kind, and in an increased mobility.

The hind was always better off than the day labourer in that he was paid by the year whether he worked or not, but as long as his payment in kind included a cottage, he was likely to have had to exist in what was little more than a temporary hovel.⁴¹ "The mainstay of the wretched cottages, that then universally existed, and of which we yet have too many specimens, has been the bondage system."⁴² Few contemporaries had a good word to say about the hind's cottage. Loudon declared them worse than pig sties and looked upon the hinds as serfs,⁴³ while a society was formed in 1841 specifically to improve agricultural labourers' cottages in Northumberland.⁴⁴ And yet there was method behind the squalor. The argument was that sound houses, permanently occupied with large and well cultivated gardens made the labourer far too comfortable and independent, and therefore less interested in working well and reliably for the farmer.⁴⁵ In the same way, the

38 George Culley, A.A., 24, 1795, p.107.

39 George Culley to John Welch, May 25th 1803. NCRO/ZCU/6.

40 In 1782, for example, John Watson, the tenant of Glororum, had asked the Greenwich Hospital for a large rent reduction because of "the great scarcity of servants (which makes their wages very high)". Quoted in Mark Hughes, Lead, Land and Coal as Sources of Landlord Income in Northumberland between 1700 and 1850, Ph.D.Thesis, Durham University, 1963, p.208.

41 See W.S.Gilly, The Peasantry of the Border, 1841 in 'A Revolution in Agriculture', Newcastle University School of Education Archive Teaching Unit, No.8.

42 Samuel Donkin, The Agricultural Labourers of Northumberland, 1869, p.11.

43 J.C. Loudon, Encyclopaedia of Agriculture, 1833, pp.482 and 495.

44 N.C., Oct.15th 1841.

45 George Culley to Dr Fuller, June 29th 1801 (NCRO/ZCU/31), and to Arthur Young, 1800 (NCRO/ZCU/3).

obligation to supply a bondager woman was a product of sound business management. When labourers were scarce, women were important - "want of Men, makes Women more valuable"⁴⁶ - and were probably absolutely essential for the numerous light, manual tasks associated with turnip husbandry.⁴⁷ In 1790, Culley had to explain carefully to Arthur Young that a wool-spinning industry in the County was out of the question because "Our Girls are all employed in Agriculture. Hoing, Haymaking & reaping etc etc",⁴⁸ and Colbeck claimed in 1847 that "nearly the whole of the harvest-work in the county is done by women".⁴⁹ The hind system provided the farmer with something that would otherwise have been difficult to obtain - a guaranteed labour supply, both male and female, for the whole year. That labour supply continued to present difficulties throughout this period, despite the hind system, is indicated by the several declarations by various groups of farmers that no labourers would be hired before specified dates.⁵⁰ Had there been a surplus of labourers, neither these declarations nor the advertisements offering rewards for the capture of hinds who had run away from farmers⁵¹ would have been necessary.

The importance of agricultural labourers offering for hire themselves and their skills at a distance will be considered in more detail elsewhere (see pp.495-9), but the general mobility of the agricultural labourer must be stressed here. House has shown that migration

46 George Culley to John Welch, May 25th 1803, NCRO/ZCU/6.

47 Bailey and Culley, 1805, p.165.

48 George Culley to Arthur Young, Dec. 8th 1790. NCRO/ZCU/3.

49 Thomas Colbeck, p.436.

50 N.C., May 23rd and June 6th 1778, April 15th 1780, Feb. 25th 1786, Feb.25th 1809 and April 15th 1826.

51 See, for example, N.C., Sept. 6th 1766.

from nearly all parts of Northumberland, except the south-east, was general after 1831 and that migration into the north-east of England made its greatest proportional contribution to the native population during the decade 1831-1841.⁵² It was claimed by a contemporary that a turnover in agricultural population of some 90% in ten years was quite feasible, perhaps even typical, in the north of Northumberland in the middle of the 19th century,⁵³ and it has been suggested that labourers in the south of the county were more mobile still.⁵⁴ In fact, it had become traditional for all labourers, but particularly hinds, to move readily to better wages or conditions. Many commentators remarked on the annual 'flitting' of the hinds. "I was told that in this part of the country, most of the farm servants are married people, and that they generally change their masters every year at Whitsunday; a circumstance which I should very much dislike. That this is the case, however, was evident from the number of carts loaded with furniture which I noticed on the road."⁵⁵ Reports from distraught land agents to their masters suggest that nothing short of a reorganization of the whole agricultural labour force was taking place annually. In 1793, it was proclaimed that "the hinds and every description of Labourers are upon the wing and standing out for an augmentation of their wages"⁵⁶ and in 1798 that "this being the 12th of May, the general day of all the Labourers flitting their habitations thro^hout the Country, we do

52 J.W.House, 'North Eastern England. Population movements and the landscape since the early 19th century', Department of Geography, Newcastle University, Research Series, 1, 1954, pp.3 and 6.

53 Rev.W.S.Gilly to The Highland and Agricultural Society Show at Berwick. N.C., Oct.8th 1841.

54 The Duke of Northumberland's Commissioners referred to "the district round Newcastle, where the peasantry more frequently change, than upon the Northern Estate". Commissioners to Duke, June 20th 1807. AC/Z/1/12b/223.

55 'A Glamorganshire Farmer', F.M., 11, 1810, p.454.

56 John Carr to Sir John Delaval, Feb.4th 1793. NCRO/2DE/4/57/13.

not know who is who till they are fixed."⁵⁷ It was said in 1838 that Northumberland farm labourers "more resemble the Arabs of the desert than any thing else"⁵⁸ and somewhat later that their migratory nature had prevented the development of the rural hamlets common in other parts of England.⁵⁹ But the mobility had more important effects. It will be suggested later (see p. 500) that migration is likely to have spread improved agricultural techniques: it also meant that there was a natural drift of labour to the most progressive and prosperous areas, both industrial and agricultural. High labour costs meant that farmers were forced to turn from traditional to more economic ways of utilising that labour, and that labour-saving implements such as the threshing machine were eagerly accepted. (Northumberland poor rates were generally lower than those of most other counties,⁶⁰ but by far the most important effect was that farmers were forced to compete for a vital factor of production, agricultural labour, with each other and with industry. This situation would seem to have offered the appropriate conditions for continual improvement in the efficiency of Northumberland agriculture.

Attempts, apparently successful, were made by the hinds to form a union in 1836. The movement started in Wooler⁶¹ and spread to Thropton⁶² and then Felton.⁶³ Whether the inspiration came from similar

57 James Dormer and Robert Forster to the Duke of Northumberland, May 12th 1798. AC, Middle Room, 'Letter Book 1796-1800', p.79. For an excellent example of the negotiations and difficulties surrounding the flitting of one hind in 1801 see Matthew Culley to John Welch, March 26th 1801. NCRO/ZCU/6.

58 Thomas Dodds, N.C., Nov.23rd 1838.

59 Seymour Bell, Collections Relating to Agriculture, newspaper cutting c.1880. CL/L630. See also Francis Heath, British Rural Life and Labour, 1911, p.13.

60 William Parsons and William White, Directory of Northumberland and Durham, 1827, 2, p.63.

61 N.C., Dec.24th 1836.

62 N.C., Jan 6th 1837.

63 N.C., Jan.20th 1837.

movements in Scotland⁶⁴ is not known, but it would seem that the Northumberland unions had as their particular aim the abolition of the bonding system. Two cases of alleged incendiarism - the only ones known in Northumberland - were reported at this time,⁶⁵ and there was some immediate advance in wages.⁶⁶ It is thought that the union was the product not simply of revulsion at the system of hind servitude or of a desire for higher wages, but of a realization on the part of the hinds that their's was very much a seller's market. A report of 1843 suggests that the union had allowed hinds to make advantageous private arrangements with farmers. "At Wooler hiring, on the 2nd inst., more hinds were present than were remembered to have been seen on any similar occasion since the union among that class of servants, seven years ago."⁶⁷

Although there was some discussion of the consequences of converting arable land to grass in the first half of the 19th century, it will be argued elsewhere (see p. 232) that this was largely a feature of the second half of the century. One consequence would have been a reduction in the number of farm labourers required to work grass rather than arable land. In the Hexham region in 1827, it was reckoned that 5 labourers would be thrown out of employment on converted wheat soils and 8 on turnip,⁶⁸ but in Glendale, it was inconceivable that agricultural labourers could ever be out of work.⁶⁹ By 1871, the situation had changed. "The result [of Free Trade] has been that whole districts in Northumberland have been put into grass, and the population has decreased as the arable culture has disappeared. The Halton Castle estate has been

64 See G. Houston, 'Labour Relations in Scottish Agriculture before 1870', Ag.H.R., 6, pt.1, 1958, pp.27-41.

65 N.C., March 23rd 1838.

66 N.C., March 24th 1837 and July 5th 1839.

67 N.C., March 10th 1843.

68 W.Bates of Hexham to ?, Jan. 6th 1827. NCRO/ZHE/34/2.

69 Matthew Culley of Coupland to R.Robson, Jan.15th 1827. NCRO/ZCU/37.

all laid to grass, and let annually in 'grass parks', and one man only is employed as cattle herd, where Mr Bates employed fifteen men, besides women and children, and extra labour in hay time and harvest."⁷⁰

Depopulation, though not quite on this scale, is evident in most rural areas of Northumberland after 1851,⁷¹ but it is perhaps doubtful whether less emphatic information about the purely agricultural population can be determined from the earlier census statistics.⁷²

Map 12:1 shows gross population change by parish between 1801 and 1851. Population increase was in the south-west a product of coal and lead mining, in Bellingham the result of iron working, and in the south-east a result of the development of coal mining and industry; but that along the northern coast could only have been the consequence of the intensification of arable land use. The population decline in some parts of central and western Northumberland may have been due to some reduction in arable acreage,⁷³ but all that is clear is that this was not widespread. That in Chillingham was attributed partly to "the employment of fewer labourers on farms which have been laid down to pasture, and partly to the reduction of the establishment at the castle".⁷⁴ A more interesting picture appears on Map 12:2 showing

70 Thomas Bell, *History of Improved Shorthorn Cattle*, 1871, p.171.

71 E.C.Sykes, *The Agricultural Geography of Northumberland*, M.A.Thesis, Geography Dept., Liverpool University, 1961, p.55. See also Merle Abbott, *The Changing Settlement and Economy of North Tyndale*, unpub. B.A. Thesis, Geography Dept., Liverpool University, 1958, fig. 20.

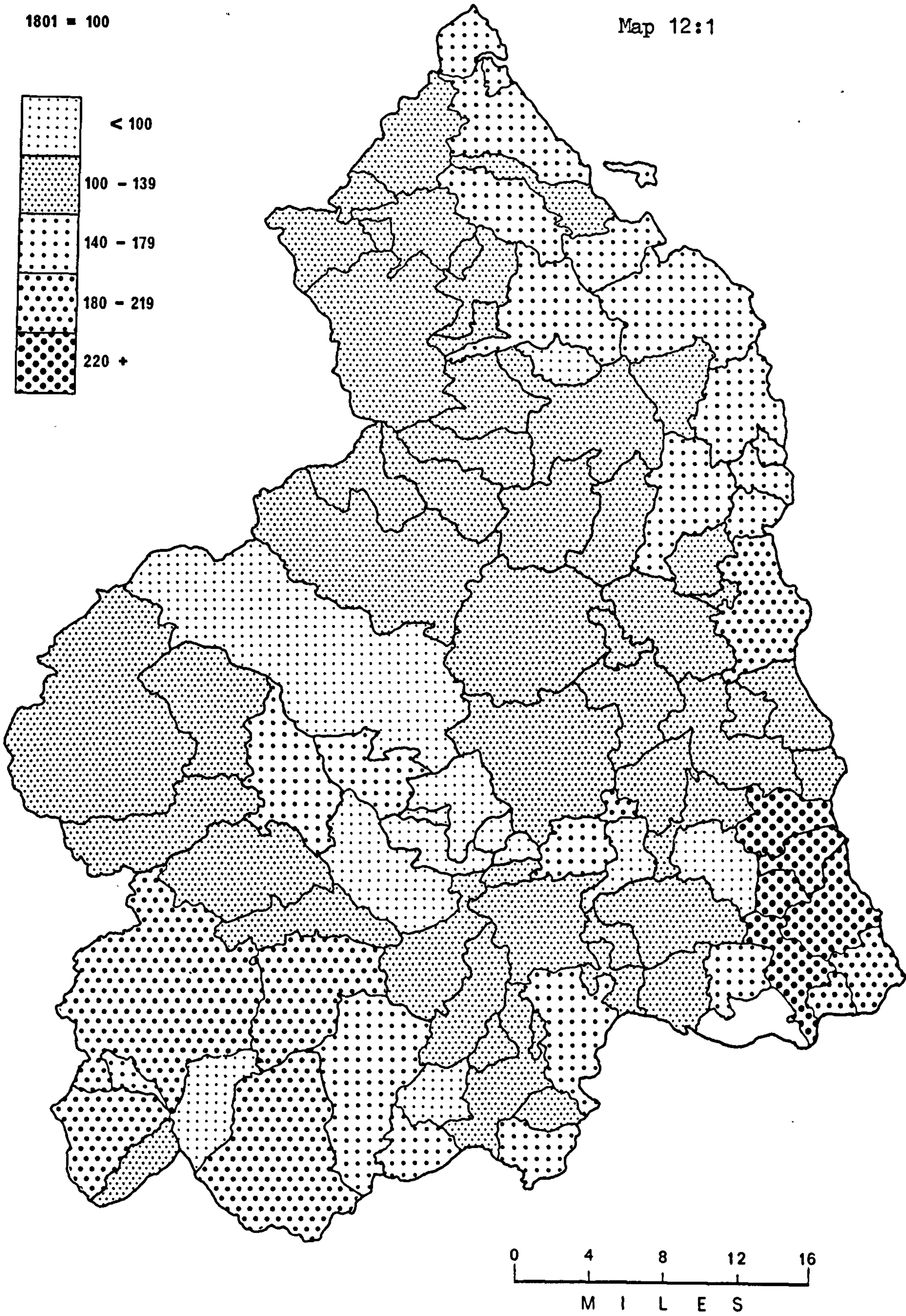
72 House has used data from the 1811 and 1831 Censuses to show the relative importance of employment in agriculture. J.W.House, *op.cit.*, pp.16-17. The data is not considered reliable enough to support more detailed investigation. See John Rickman, *Preface to 1831 Census Abstract*, 1833, pp.ix-xi; and *1851 Census Population Tables*, 1852, 1, *Results and Observations*, pp.lxix-lxxi.

73 Population decline in Elsdon and Corsenside was attributed to this conversion. John Hodgson, *History of Northumberland*, 1827, pt.2,1, p.83.

74 W.Whellan, *Directory of Northumberland*, 1855, p.679.

1801 = 100

Map 12:1

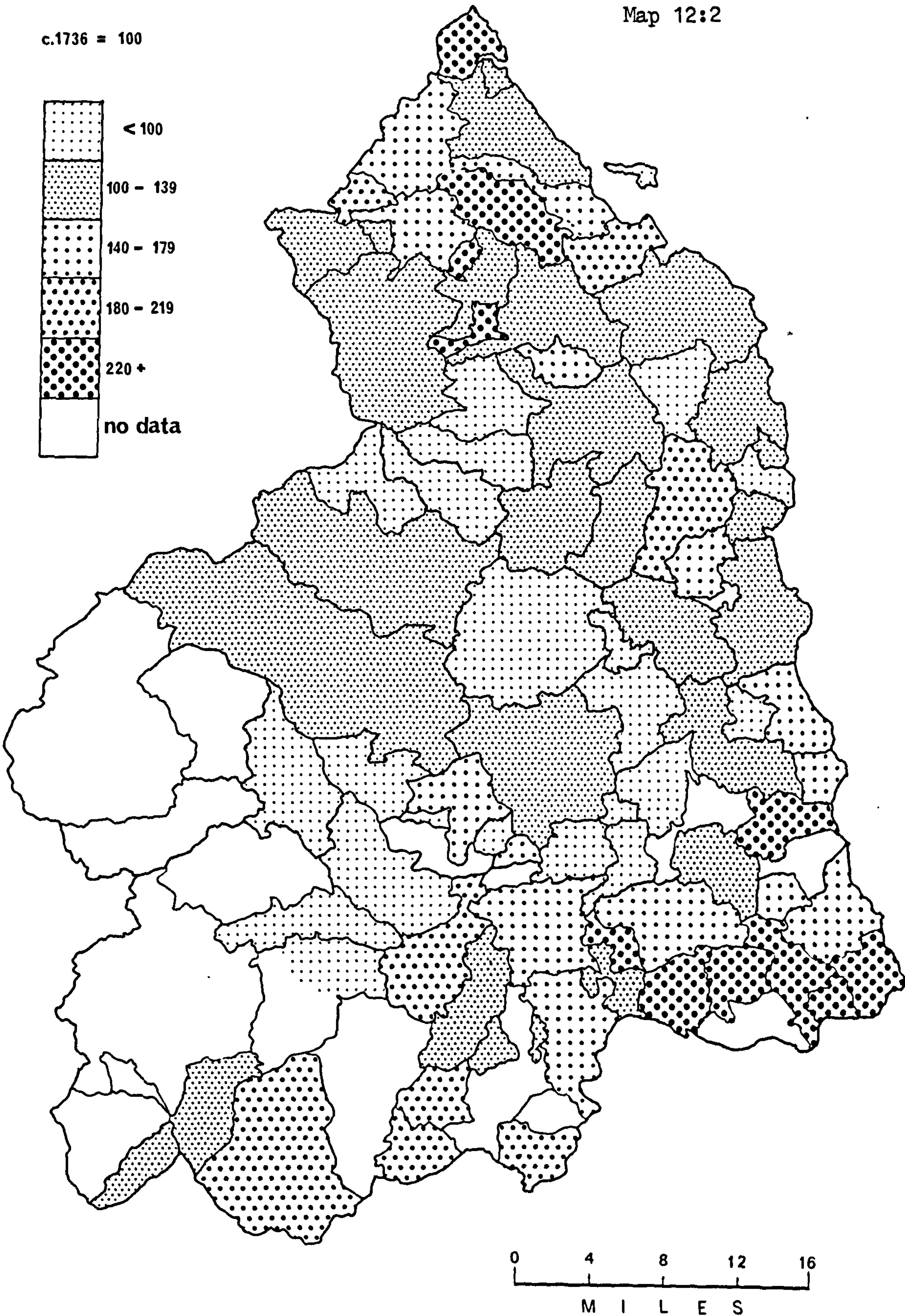


Population Change by Parish between 1801 and 1851.

Sources: 1801 and 1851 Census Returns.

Map 12:2

c.1736 = 100



Population Change by Parish between c.1736 and 1801.

Sources: 1801 Census Return.
Chandler's Visitation, 1736, NCL/L253.
George Mark, A Survey of a Portion of
Northumberland, 1734, NCL/L942-82.
Archbishop Herring's Visitation, 1743, Surtees
Society, 1949.

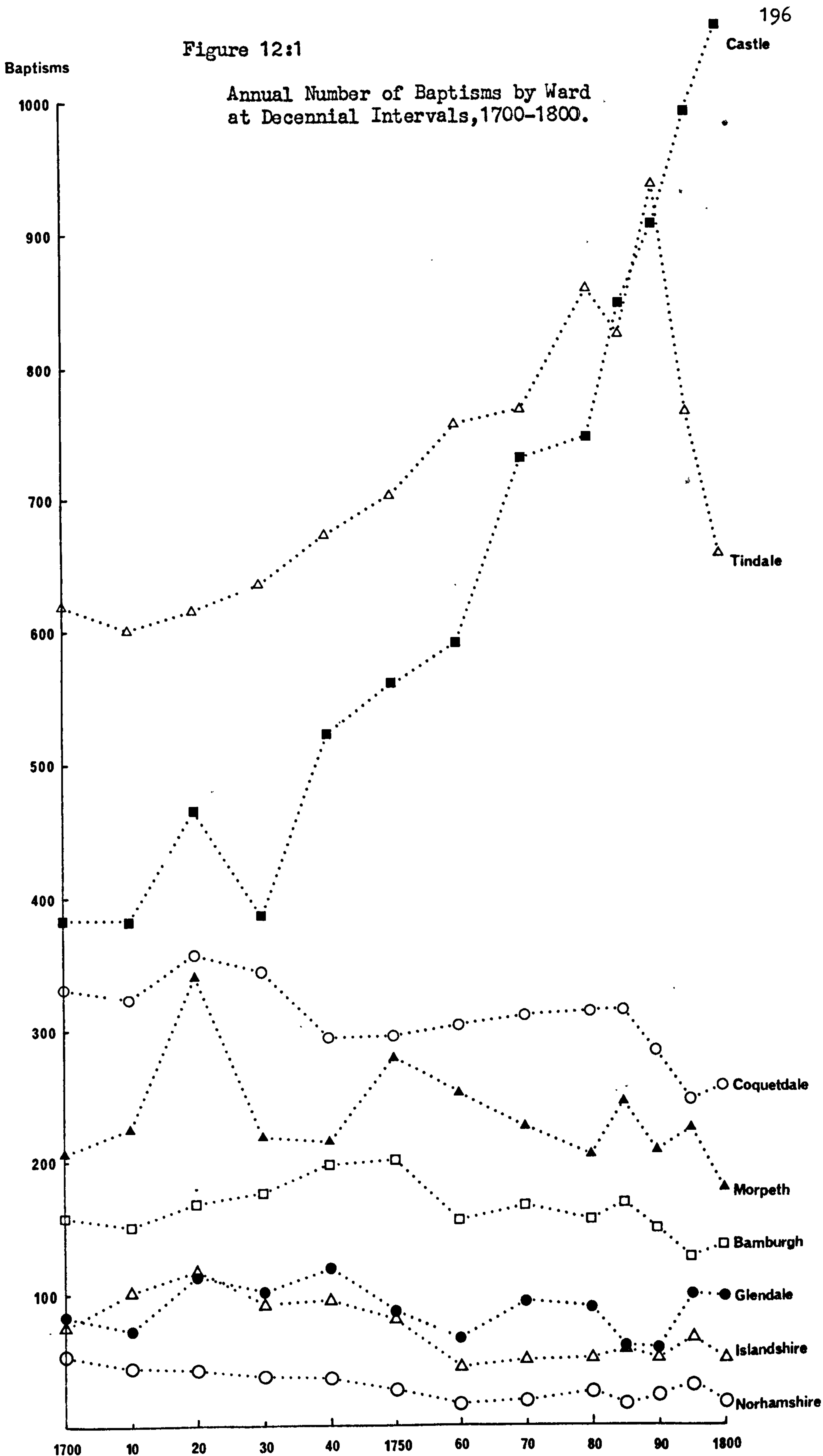
population change by parish between c.1736 and 1801.⁷⁵ Again, the south and particularly the industrial south-east appear as areas of growth and presumably of attraction. Much of the rest of Northumberland, particularly some central and highland areas, experienced population decline and it can only be surmised that small-scale, semi-subsistence agriculture was being replaced in these parts by larger, less labour-intensive units. The mountainous region of Kidland contained only 60 people in 1801, dependent on three large sheep farms,⁷⁶ but in 1736 had boasted 65 families which lived "mostly in single houses called steed houses inhabited by stock masters and herds."⁷⁷ The north of the County is distinctive in its considerable advance in population, an advance which is unlikely to have been occasioned by anything other than a more intensive cultivation of the land.

Population statistics, even presuming them to be reliable, generally yield information too comprehensive to be of specific benefit to a study of agriculture. All that is really certain is that the population of the south-east was rapidly increasing throughout the period 1750-1850. It is not unlikely that this area was not only a major market for some agricultural produce, but was also the final destination of some agricultural labourers and the basic cause of their scarcity and of high agricultural wages. Figure 12:1 of baptisms at decennial intervals in the various wards between 1700 and 1800, provides

75 The population figures for 1736 are those given in Bishop Chandler's Visitation of that date (NCL/L253). These are substantiated by the less comprehensive but apparently independent figures of George Mark for 1734 (George Mark, A Survey of a Portion of Northumberland, 1734. NCL/L942 82). Data for St. Johnlee and Allendale is from Archbishop Herring's Visitation of 1743 (Surtees Society, 1949) Parish totals were given in family units. The figures for 1801 are from the Census.

76 William Parsons and William White, op.cit., 1827, 2, p.480.

77 Bishop Chandler's Visitation, 1736. NCL/L253.



a very rough indication of the rapid population growth in the south, in Tindale and especially Castle Ward, compared with a more static situation in the rest of the County. Figure 12:2 shows the age structure of the population of the various wards in 1821. All the pyramids exhibit a stable growth pattern, but show there was a marked tendency to lose young males in all but Tindale and Castle Wards. It seems logical that some of these found their way to the south of the County and became industrial workers. Only an elaborate demographic study would prove this conclusively.

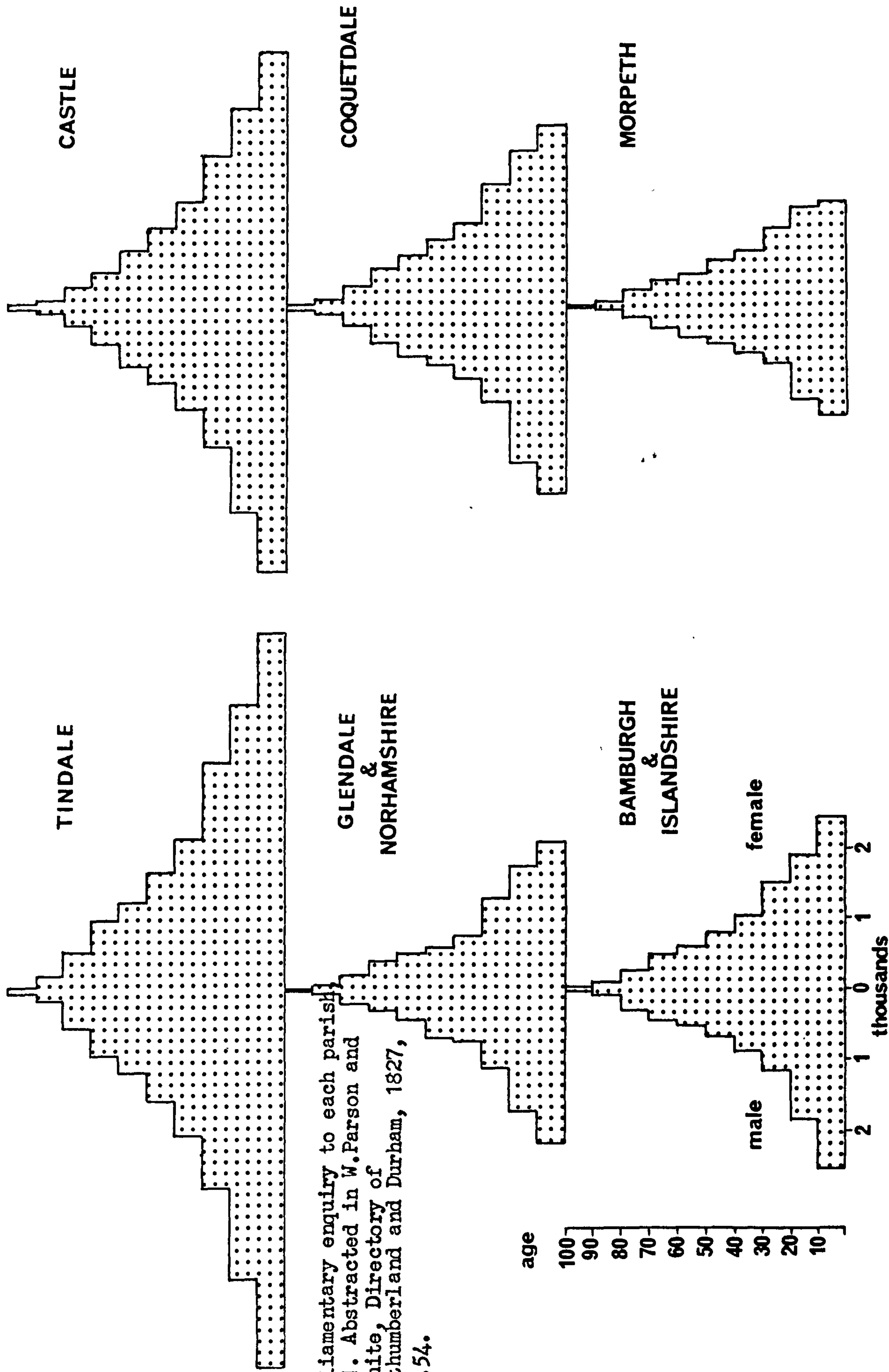
The scarcity and expense of farm labour was far from being a disadvantage to the Northumberland farmer. It meant that he automatically followed Arthur Young's maxim that "The soil ought to be applied to that use in which it will pay most, without any idea of population. A farmer ought not to be tied down to bad husbandry, whatever may become of population".⁷⁸ It meant there was always pressure to find alternatives to manual labour or to use that labour more efficiently. When talking of the supposed advantage the South of England with its cheaper labour held over the North in the 1820s, Matthew Culley pointed out that "in all the other articles which go to form the 'cost of production' we have a manifest advantage in the cheapness of their labour being more than compensated by our superior skill and machinery".⁷⁹ In 1823, Joseph Lowe had argued that "From the progress of improvement in husbandry the same number of labourers raise a considerably larger share of produce than they did ten or twelve years ago".⁸⁰ It may not be too fanciful to express the argument differently, that limitation in the numbers of labourers was itself a stimulus to improvement in husbandry. The close relationship between labour scarcity and the inclination to

78 Arthur Young, *Political Arithmetic*, 1774, p.269.

79 N.C., Feb.10th 1827.

80 Joseph Lowe, *The Present State of England*, 1823, Appendix, p.56.

Figure 12:2
Northumberland Age Structure by Ward, 1821.



Source: Parliamentary enquiry to each parish, 1821. Abstracted in W. Parson and W. White, Directory of Northumberland and Durham, 1827, 2, p. 54.

adopt labour-saving machinery is axiomatic,⁸¹ though Culley declared that demand for labour was so great in Northumberland that it would have been a practical impossibility for machinery to reduce it, and that machinery had been most important in enabling the farmer "to do many things which he would have left undone if he had only manual labour to depend upon".⁸² When the annual supply of Irish reapers virtually ceased in the 1850s, the sickle, the reaping instrument generally used in Northumberland, rapidly fell from favour. "The scarcity of labour during the last few years, has drawn more attention to the reaping machine, the Aberdeen Scythe, and the long-handled sickle."⁸³ So it must have been throughout the preceeding century: labour scarcity must have forced farmers continually to re-examine their situation and to re-assess their methods.

81 See, for example, William Lester, *A History of British Implements and Machinery Applicable to Agriculture*, 1811, p.208; and 'H', F.M., 23, 1822, p.56.

82 Quoted in W. Hasbach, *A History of the English Agricultural Labourer*, 1908, p.256.

83 Seymour Bell's notes c.1858, *Collections Relating to Agriculture*. NCL/L630. See also 'Notes from the Farm-North Northumberland', Aug.30th 1860. NCRO/ZHE/34/6.

C. The Process of Agricultural Change and Innovation Diffusion

XIII

Agricultural Land Use

The basic division in the use of agricultural land is that between arable and pastoral. Knowledge of the use to which land in the past was being put, even in these most general of terms, is essential to an appreciation of agricultural change, whether that change be overall development or specific innovation. Diffusion of arable improvements is unlikely to have proceeded apace during times of arable contraction.

Although there were no attempts to calculate the arable acreage of the County until the Napoleonic War period, it seems likely that there was a considerable increase in arable well before that time. Newspaper advertisements for farms to be let gave more encouragement to would-be tenants to plough out grass land in the years 1750-70 than during any other period of similar duration.¹ Typical wording of such inducement was "the whole Farm is now in Grazing, but Liberty will be given to plow a Part thereof"² or "one hundred Acres of fresh Land, ready to plow or tear out"³ or "great Encouragement will be given to entering Tenants to plow out fresh Grounds".⁴ Many, though by no means all, of these farms were located in highland districts in the south and south-west of the County and were farms either newly carved from the commons or enlarged by additions therefrom. The Enclosure Movement in Northumberland after 1750 was almost completely exclusive to the common wastes,⁵ a process which naturally facilitated their conversion, at least in part or temporarily, to arable. Map 13:1 shows those areas of the County to be enclosed by Act after 1740 and clearly depicts a

1 N.C., 1750-70 - 13 advertisements, 1771-90 - 8, 1791-1810 - 4, 1811-30 - 3, 1831-50 - 4. Only in 1818 and 1849 are there advertisements stressing that pasture is to remain permanent.

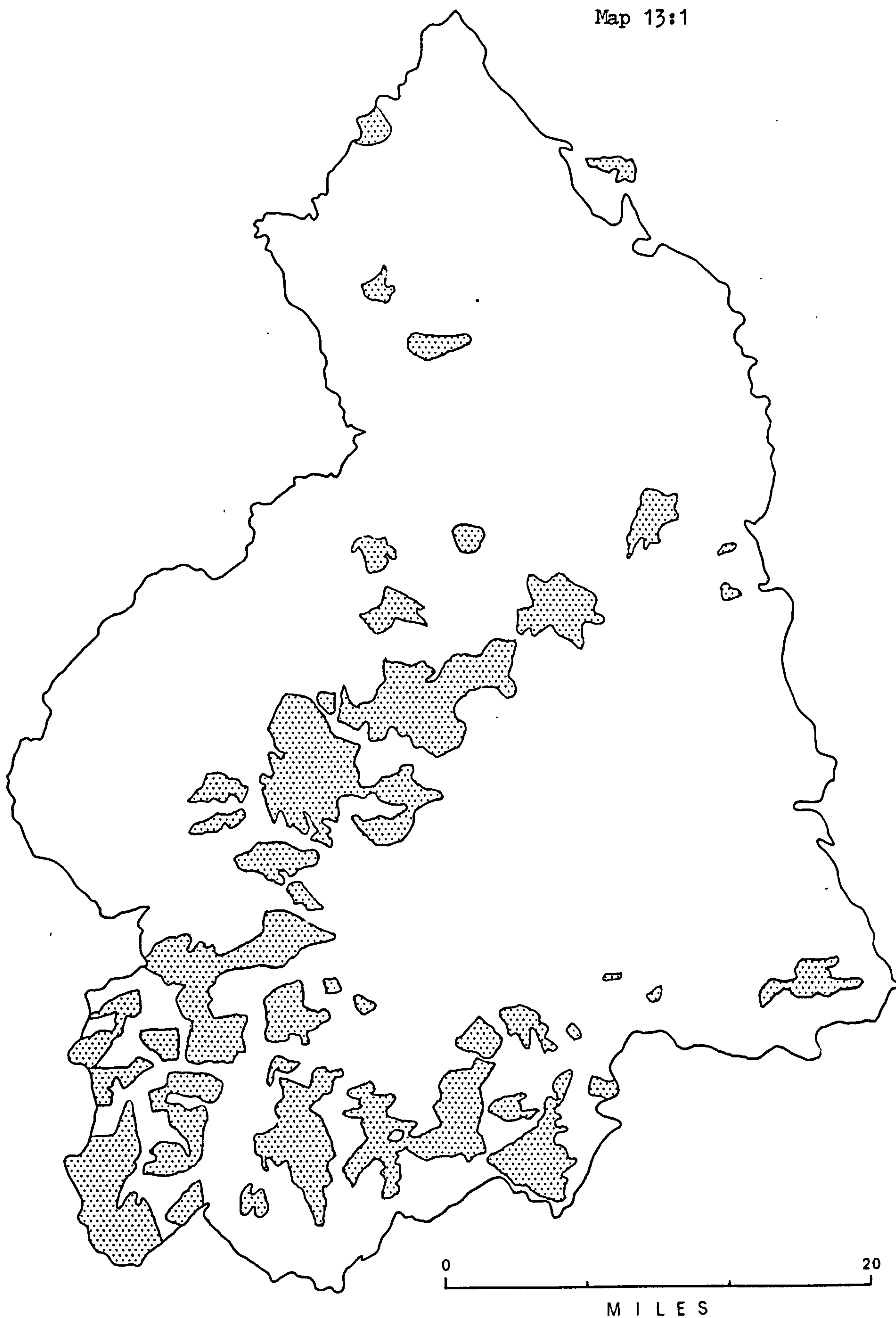
2 A farm at Heighlaws, Hartburn; N.C., Jan.4th 1755.

3 Part of Chillingham Old Park; N.C., Dec.13th 1766.

4 Well House, Chollerton; N.C., Nov.25th 1758.

5 "When Parliamentary enclosure began in the 1720s there was hardly an open field to be enclosed in Northumberland, Durham, or the North Riding." R.A. Butlin, 'The Evolution of the Agrarian Landscape of Northumberland 1500-1900'. M.A. Thesis, Liverpool University, 1961, p.105. Butlin discovered only 11 private Enclosure Acts for Northumberland between 1740 and 1844 which included areas of common field (p.123).

Map 13:1



Parliamentary Enclosure after 1740.

After R.A.Butlin, The Evolution of the Agrarian Landscape of Northumberland 1500-1900, M.A.Thesis, Liverpool University, 1961.

process of enclosing common waste in the highlands rather than common fields in the rest of the County. Although enclosure of moors, both by Act and privately, was extensive throughout the period 1750-1850,⁶ and was often conducive to the extension of arable cultivation,⁷ enclosure of such land was frequently desired for purely pastoral purposes.⁸

The distinction between arable and pastoral becomes blurred when it is considered that by far the most popular method of improving moor land was to pare and burn it and perhaps lime it as well, and then to take several crops before laying it down with seeds. This was, in fact, merely a more refined and thoughtful development of a process that had been going on in Northumberland for centuries - that of taking grain crops from newly-ploughed hill land until the exhausted ground was allowed to revert to pasture of its own accord. The advantage of sowing fresh land was that given favourable weather it could produce excellent yields, even without manure, before exhaustion set in. This was happening in Ovingham in 1801 when it was reported that "this present year the higher Grounds, which are three parts out of four of the parish have produced double Crops..."⁹ and in the high and exposed parish of Kirkwhelpington where a total wheat acreage of 30 acres yielded 32 bushels per acre;¹⁰ one of the highest reported wheat yields in the County on some of its least auspicious land. Similarly, the yields which Arthur Young mentioned as typical of various lowland parts of the

6 Newcastle Chronicle, May 23rd 1877 gives a figure of 111,248 acres between 1702 and 1799 (of which 43,751 were enclosed between 1760 and 1800); 43,873 acres between 1800 and 1843, and 39,394 acres which had been enclosed since 1843.

7 See, for example, the recommendations of John Bower and John Claridge, 1817 Greenwich Hospital Visitation, PRO/ADM/79/57/pp.431-2 and 59/p.267.

8 See, for example, John Naismith on enclosure in the Cheviots, A.A., 27, 1797, p.198.

9 PRO/HO/67/8

10 Ibid.

County in 1770, pall before the yields he found near Glenwhelt, by the Cumberland border. There wheat yielded 30 bushels, barley 32 and oats an almost incredible 90 bushels per acre.¹¹ The fact that these moorlands were often unenclosed commons does not seem to have deterred this occasional arable occupation. When Lord Tankerville complained to his land agent that Wooler Common should not have been ploughed, he was told that stopping it would be difficult as the tenants had been ploughing 200 acres of it for the previous 10 or 12 years and because "this Comon or moor has been Ridg & Furror Plowd some Hundred Years egoe".¹² Such arable encroachments upon the commons were apparently usual enough to have been given some legal standing by the payment of 'acre money' to the lord of the manor.¹³

Later commentators on the traces left by these spasmodic arable incursions onto the moors make it quite clear that these cannot be regarded as signs of extended margins of arable cultivation of the period 1750-1850. An expert of the mid-nineteenth century wrote, "The whole system of farming consisted in ploughing a few acres for corn year after year, until its fertility was exhausted, and then leaving it to rest, a fresh parcel was torn out. This... accounts for the traces of cultivation, ridge and furrow, to be found on almost every moor and hill, even at an elevation we would now think it folley to attempt to grow corn".¹⁴ Even at the turn of the 18th century, when high wartime corn prices might have given reason to extend arable to the highest possible land, men were awed by the clear signs of the arable cultivation that

11 Arthur Young, 'Northern Tour', 1770, 3, p.104.

12 Joseph Hutchinson to Lord Tankerville, Nov.26th 1777. NCRO/Tankerville Box 1/D/2 unsorted.

13 There exists a case outline dated April 3rd 1775 concerning Nubbock, near Hexham, which makes the point that "Some of the inclosures are in Tillage and others in pasture and have often been changed from one to the other." NCRO/Allendale Ms./CS/15/a.

14 Seymour Bell c.1860, NCRO/ZHE/34/1.

had already occurred. "The ridges and furrows, apparent in various parts of Kidland, plainly show that the feet and sloping sides of these finely-formed hills have, at one time, been more accustomed to cultivation than at present."¹⁵ "In this neighbourhood [Yetholm, Kirknewton], many of the hills bear the marks of having been cultivated to the summit; and some of those which have long lain neglected, are now breaking up for turnip, etc."¹⁶ The case was the same on the moors of south Northumberland.

"... here the surface has been cast into equal ridges by the plough, though the land is now covered by heath, and agriculture has formerly flourished in situations so elevated as to preclude the possibility of obtaining corn crops from them at the present day. Record and tradition are alike silent respecting the era when, and the people by whom, these districts were subject to tillage."¹⁷

While it is probably going too far to say that an outfield 'system' had long been in operation in upland districts of Northumberland, it is clear that arable cultivation had at some time taken place on a great deal of Northumberland moorland and that these incursions would have continued throughout the 18th century even without enclosure. It may even not be too far fetched to suggest that moorland held in severalty was less likely to witness such daring arable usage in that individual landlords were reluctant to allow the exhaustion of their lands, at least without the compensation of increased rental.¹⁸ Most leases of the second half of the 18th century, despite their neglect of detailed

15 J. Hodgson and F.C.Laird, 'The Beauties of England and Wales, 1813, 12, p.116.

16 John Naismith in a letter about the Cheviot Hills to A.A., 27, 1797, p.179.

17 N.J.Winch, 'An Essay on the Geographical Distribution of Plants through the Counties of Northumberland, Cumberland, and Durham', Newcastle, 1819, pp.19-20. L.& P. N581/6.

18 " The Bailiffs should be strictly directed never to permit any Grass Land to be broke up without being themselves satisfied that it is necessary and proper." Visitation Report on Greenwich Hospital lands by James Stuart and Thomas Hicks 1775, PRO/ADM/79/57.

conditions of husbandry, tried to limit the extent of arable, usually to something like a third of the total holding, though such clauses seem to have been frequently abused.¹⁹ In that these restrictions did not exist on the moorland commons, it is not impossible that as long as arable rights were equally shared and population pressure remained low, arable use of such lands was as likely to occur under common ownership as under private.

Corn can be made to grow at practically any height, but severity of climate increases with altitude and the chance of a successful crop decreases. In Cumberland in 1852, it was said that the maximum elevation at which wheat was grown was 600 feet, while barley was grown as high as 800 feet and oats somewhat higher.²⁰ Napoleonic War estimates for Northumberland were considerably loftier - wheat was grown to 1,000 feet, barley and rye at 1,500 and oats, turnips and potatoes up to 2,000 feet.²¹ Walter White found oats and barley at 1401 feet on the top of Simonside in 1859,²² and of Alnwick Moor he remarked, "What would Adam Smith or Arthur Young say if they could return and see how drainage and tillage are transforming the moorlands into fields of grain and potatoes...?"²³ Of Adam Smith's opinions on Northumberland moors, we know nothing: of Arthur Young's, a little is known. He found it "melancholy to ride through such vastly extensive tracks of uncultivated good land"²⁴ and at the same time cared little for the popular method of utilising such land. "While moors are thus improved, I do not much wonder at seeing so much waste land in Northumberland."²⁵ The 'improvement' to which Young referred was the ploughing out of patches of hillside on which oats and rye were grown until the land was exhausted and allowed

19 The Greenwich Hospital reporters repeatedly remarked on the extensive abuse of this clause in 1775.

20 William Dickinson, 'On the Farming of Cumberland', J.R.A.S.E., 13, 1852, pp. 215-217.

21 N.J. Winch, *op.cit.*, pp. 19-20.

22 Walter White, *Northumberland and the Border*, 1859, p. 200.

23 *Ibid.*, p. 193

24 Arthur Young, *op.cit.*, p. 115.

25 *Ibid.*

to revert to grass. Though greater care was later taken by paring and burning, liming, growing somewhat fewer corn crops, and by adding grass and clover seed to the abandoned ground, the basic arable use of high land was essentially the same in 1850 as in 1750 or, indeed, long before. Often it was justified on the grounds of improving the herbage,²⁶ but the system of intensive grain cropping rarely changed.²⁷ In the North, high ground was usually broken up with a crop of turnips, the keeping quality of the small turnips produced on 'burnt land' surpassing all others.²⁸

It is important to remember that the total arable acreage of highland areas throughout this period was always small (see Table 13:1) and that acreage changes, though striking relatively, were in absolute terms, insignificant. Moreover, the tithe files for many upland townships make it quite clear that corn was grown there only for domestic and local consumption in order to avoid the difficulty and expense of importing it from more favoured areas.²⁹ It is, therefore, unlikely that the concept of 'margins of cultivation' will be particularly meaningful in the Northumberland moorland context. The arable did not spread up the hills until halted by geographic conditions: it had always been there, but only in small, scattered and largely temporary patches.³⁰

It is probably more useful to think of arable expansion in terms of the development of convertible husbandry - that system by which land was regularly converted from pastoral into arable and vice versa in

26 "It is found necessary now and then to break up these high grounds for the sake of renovating the pasture." William Dickinson, *op.cit.*, p.217.

27 John Housman, 'A Topographical Description of Cumberland, Westmorland, Lancashire and a part of the West Riding of Yorkshire', 1800, p.151

28 "If you could meat with a few burnt land Turnip, pretty good, taked of wd do well. And the Burnt land ones are the best worth buying, always. They feed best, are soundest, and fullest of juices. and stand the Winters frosts the best!" George Culley to John Welch, Oct.9th 1802. NCRO/ZCU/6.

29 See, for example, tithe files for Harbottle, Birtley High Division in Chollerton and Lambley. PRO(A)/IR/18/7009,6826 and 7093.

30 "There is very little Arable land in it, and that there is is so scatter'd about in Patches on the Sunny Sides of the different Hills that is [sic] impossible to speak of it collectively." Tithe file for Ingram, Linhope and Greenshaw Hill, Ingram, April 7th 1842. PRO(A)/IR/18/7077.

Table 13:1Acreage under Chief Grains in some Highland Parishes

Parish	area in acres	W H E A T Acreage		B A R L E Y Acreage		O A T Acreage	
		1801	1867	1801	1867	1801	1867
Falstone	57,700	11	0	165	5	299	26
Kirkdale and Kirkwhelpington	16,853	37	0	438	9	644	99
Knarésdale	7,144	10	0	100	40	200	76
Whitfield	12,125	17	0	42	11	183	140
Kirklaugh ⁽¹⁾	6,665	3	0	29	8	71	22

Sources: 1801 Crop Returns. PRO/HO/67/8

1867 Agricultural Census, PRO/MAF/68/
139(1) 1803 Returns, John Hodgson, History
of Northumberland, 1832, pt.2,3,p.58.

rotation; in terms of the spread of turnip cultivation, which demanded that even purely pastoral enterprises had some arable land;³¹ or in terms of a three-course rotation with a great deal of permanent pasture being exchanged for a four-course with considerably less (see pp. 326-7). That there was an arable increase between 1750 and 1800 there can be little doubt, but the measurement of its extent in the absence of all figures is not possible. The only available evidence is that of letters from land agents to landlords advising them of the struggle to prevent tenants ploughing-out grassland,³² of surveys reporting on the increase of arable,³³ and of observers obliging enough to have made comparisons. In 1807 'A Traveller' remarked,

"I never in my Life, Sir, was more amazed, or more agreeably astonished, than in our Journey between Carlisle and Newcastle -

31 "... what is under the Plough is so rather for the purpose of raising a few Turnips for winter-food for Stock than from any profit to be derived from Corn." Tithe file for Hartside, Ingram, April 7th and 8th 1842. PRO(A)/IR/18/7022.

32 See, for example, Joseph Oxley to Sir John Delaval, March 9th 1774. NCRO/2DE/4/11/4

33 e.g. Greenwich Hospital Visitation Report of 1775. PRO/ADM/79/59.

I am not a very old Man, Yet I recollect when there was hardly a house between those places, though a distance of 60 miles. All was heath and Wild Waste, not the trace of a plough anywhere to be seen - How changed the scene! there is not a piece of Land that is not now well cultivated... ³⁴

Such reports, the progress of enclosure, of turnip cultivation, the development of new rotations, all point to an increase in arable taking place before the Napoleonic Wars. In that more detailed evidence as to the extent and variation of this increase is not available and may therefore not be used to further knowledge of agricultural development and innovation, it must suffice to say that an increase took place and that it was probably substantial.

It is more rewarding to concentrate on and draw conclusions from a period for which more apposite information exists. The poor harvests of some of the Napoleonic War years produced not only high corn prices but enough panic to prod the central government into investigating the extent of the country's food stocks and how much was being grown. Parts of the findings of the inquiries of 1795, 1801, and 1803 in Northumberland remain. How reliable these figures would be even had they all survived is a matter of some doubt, but in the absence of any other information of this type, the returns should be fully, if guardedly, exploited.

The 1803 Returns exist in two forms. As they were collected by the magistrates, they were returned as an abstract for the County of Northumberland to the Lord Lieutenant of the County, the Duke of Northumberland, and this abstract is to be found at Alnwick.³⁵ Mackenzie and Hodgson obviously had access to this abstract and to at least some of the individual parish and ward returns for they publish a few of the

34 The Gentleman's Magazine, January 1807, pp.38-39.

35 AC/Y/4/2/b/5

figures in their histories of Northumberland.³⁶ Mackenzie's figures, apart from copying mistakes as in the total number of sheep in the County and the omission of some figures such as those for turnips, which were located apart from other crop acreages in the Lord Lieutenant's abstract, are identical to those of the Alnwick document.³⁷

The 1795 Returns also exist as two sources, but their purpose was somewhat different. The Return was prompted by the very poor harvests of 1793 and 1794 and consequent grain shortage and was designed to find out how the harvest of 1795 compared. It was organized by the Lord Lieutenant who canvassed the magistrates in the 629 townships of Northumberland and sent the returns to the Duke of Portland at the Home Office.³⁸ Unfortunately the returns now survive only as the total expected produce of each crop for the whole County accompanied by an indication of how the yield compared with normal years. More fortunately, there remains in Northumberland the original pencilled scribbblings by which the calculations were made for all of Tindale and Glendale Wards.³⁹ These give the acreage under each crop for unnamed subdivisions of each part of both wards and also give the yield for each entry and how it compared with the average yield for that area.⁴⁰ Hence it is possible to determine the actual 1795 yield for all of Tindale and Glendale Wards for wheat, oats and barley, and as Glendale Ward contained some of the best arable land in the County and Tindale some of the worst, it is

36 E.Mackenzie, 'History of Northumberland', pt.2, 1, 1825, pp.221-222. There are 8 individual parish returns for 1803 in John Hodgson, 'History of Northumberland', 1832, (pt.2, 2, p.370, Morpeth and Ulgham; p.278, Stannington; and pt.2, 3, p.58, Kirkhaugh; p.78, Knaresdale; p.97, Whitfield; p.113, Haltwhistle; and p.362, Warden). This is the only known source for 1803 statistics on the parish scale.

37 The 1803 Returns were initiated as a preparation for withdrawing the civilian population from coastal areas and for instigating a scorched earth policy in case of enemy invasion. Hence much of the abstract is given over to quantities of deadstock and to grain threshed or not threshed out. Other returns exist for the numbers of horses and carts available to carry food and people to the interior.(NCRO/ZSW/198). See also correspondence in NCRO/ZSW/596 and NCRO/2DE/4/25/43 and 46.

38 PRO/HO/42/37/119.

39 NCRO/QSB/89/32.

40 There is a total of 213 entries for wheat, 287 for barley and 189 for oats, each giving an acreage, the expected produce in Winchester bolls, bushels or local measures and most stating how this compared with the yield of common years. It is made clear that this is meant to be

possible to arrive at a reasonably accurate average yield for each of the three main crops for the whole County in 1795. With this knowledge, the total county acreage for these three crops can be deduced (see Table 13:2).

Table 13:2

Acreages of Wheat, Barley and Oats for Northumberland
and Berwick (excluding Durham), 1795 and 1803

	<u>A</u>	<u>B</u>		
	1795 County Produce (1) (Winchester quarters)	Supposed County Yield in 1795 (2) (Winchester bushels per acre)	County acreage in Chief Grains in 1795 derived from A and B.	1803 County Acreage (3) under Chief Grains.
Wheat	68,625	16.3	33,681	39,236
Barley	64,741	23.5	22,039	21,882
Oats	232,718	24.2	76,932	71,803
		TOTAL	<u>132,652</u>	<u>132,921</u>

Sources: (1) 1795 Return, PRO/HO/42/37/119.
(2) NCRO/QSB/89/32
(3) AC/Y/IV/2/b/5.

A rough check can be made on the accuracy of these yields by comparing the actual 1795 yield for each crop claimed for Tindale and Glendale combined with their estimated normal yield adjusted by the percentage given in the abstract as the difference between a normal crop and that of 1795 for the whole County (see Table 13:3). It would seem that the combined Tindale and Glendale yield for 1795 was fairly typical of that for the whole County. The 1795 county grain acreages derived from these yield figures and shown in Table 13:2, are comparable with the acreages given straightforwardly in the 1803 abstract.

It is unfortunate that the total acreage for the three main grains in 1795 and 1803 shown in Table 13:2 are so nearly identical. The method by which the figures were derived and probably that by which they were originally collated, do not support the accuracy implied. Only the most general conclusions can be drawn: first, that though there
an account for the total grain-growing land in these wards.

Table 13:3

The Degree to which Yield for Glendale and Tindale Wards
is Representative of County Yield

	<u>A</u>		<u>B</u>	
	Normal Yield for Glendale and (1) Tindale Wards Winchester <u>Bushels per acre.</u>	1795 Yield for Glendale and (1) Tindale Wards. Winchester <u>Bushels per acre.</u>	Proportion (2) by which 1795 County Yield differed from <u>normal yield.</u>	A adjusted by B. Winchester Bushels <u>per acre.</u>
Wheat	21.0	<u>16.3</u>	" ⁷ /25ths less"	<u>15.1</u>
Barley	25.0	<u>23.5</u>	" ¹ /9th less"	<u>22.2</u>
Oats	24.9	<u>24.2</u>	"crop equal"	<u>24.9</u>

Sources: (1) NCRO/QSB/89/32
(2) PRO/HO/42/37/119

probably was an increase in arable prompted by the enormous grain prices of this period, it does not seem to have been as dramatic an increase as has sometimes been imagined; and, secondly, that high grain prices might have been most immediately reflected in a change in cropping rather than a sudden shift from pastoral to arable. The increased wheat acreage between 1795 and 1803 seems as though it could well have been created from land which should have been growing oats. High corn prices did not persist throughout the war period; there were very marked peaks and troughs from one year to the next and even from month to month, nor was there the same profit to be made on all crops (see p. 287). When prices soared, most money was to be made from the sale of wheat, so, wheat was grown at the expense of other grains. When prices were unstable, wheat had to be produced quickly, before a fall occurred. In such a climate, there was hardly likely to have been as much inclination to withdraw land from pasture, to spend time and money paring and burning, liming or fallowing as there would have been simply to abuse existing rotations. The Northumberland Quarterly Reports give some indication of this happening,⁴¹ though the suggestion is that wheat land was increasing

⁴¹ F.M., Jan.1800 to April 1819 with few interruptions.

at the expense of barley rather than of oats.⁴² It could be that the exceptionally low oat prices of 1802 were a particular temporary incentive to grow less of that grain.⁴³

Even the best farmers were anxious to profit from high wheat prices. George Culley wrote to John Welch in March 1802, "I believe we never sold so much Wheat by this Season, in any year I recollect since we grew so much? And not only us but most people I believe in this District, led by the same Idea Viz that Wheat could not hold the price it began with? sold more than usual. Besides it raised so much money."⁴⁴ Indeed it had done, as Table 13:4 indicates. In a letter to Arthur Young, George Culley remarked that the fertility of arable depastured by sheep "sometimes, induces the Farmers, to take a Crop of Wht, after the Oats, before Fallowing for Turnip. And I think it is the more excusable, while Wheat sells so well, & the land is in high Spirits".⁴⁵ When grain prices fell, Culley admitted that he had made a killing, "... let us be thankful, that we have had our share of wonderfull good times; what is more, we made use of them, so, as we can bear a brush?"⁴⁶ An entry in his landlord's accounts three years later suggests that Culley's making use of good times was at last to be punished. "To Mess^{rs} Culley for Breach of Covenant £838.0.0."⁴⁷

Table 13:4

George and Matthew Culley's Grain Receipts

	Oats	Barley	Wheat	Total Receipts for all Grain	% of Total Grain Receipts earned by Wheat
	£	£	£	£	
1797	1117	195	4477	5789	77
1799	2149	292	5706	8147	70
1800	635	376	5973	6984	86
1801	1990	727	10937	13654	80
1802	1121	596	6045	7762	78

Source: NCRO/ZCU/33.

42 See particularly the F.M., April 1801, Jan.1804, and April 1807.

43 "Oats are now... scarcely saleable to the Merchants at these prices!" George Culley to John Welch, March 30th 1802. NCRO/ZCU/6.

44 Ibid. 45 George Culley to Arthur Young, Dec.8th 1790. NCRO/ZCU/

46 George Culley to John Welch, April 14th 1802. NCRO/ZCU/6. 3

47 John Bailey's Accounts, Nov.1805. NCRO/Tankerville Box 4/C/9 unsorted.

It is likely that Culley was typical in that he was growing more of the most valuable grain on existing arable or breaking up reasonable quality pasture land, not marginal land at all. He wrote in 1802, "The Plough has paid well of late certainly, especially upon good land?"⁴⁸ and to the Annals of Agriculturs of the Cheviots that "it is but a trifle of corn that is produced in these little valleys".⁴⁹ A report to the Greenwich Hospital Commissioners in 1805 on the Demesne Haugh Farm at Dilston, 187 acres of excellent pasture land, outlines how the use of the best pasture land differed in Northumberland from the South.

"A considerable part of this Haugh would make an excellent feeding pasture, and in that state, we have no doubt, similar land would be used in the South of England, and we were at the first view of it inclined to think that the tenant should be restrained from breaking it up; but as it is also exceedingly good arable land and well adapted to the growth of turnips and artificial grasses as well as corn, and being moreover the sort of land most sought after in this part of the country, and producing the greatest rent, we were soon convinced that a restriction of that kind would be injurious to the Hospital."⁵⁰

Land which could grow turnips and artificial grasses in rotation was more valuable as arable than as pasture: land which could not was left, "in a most slovenly state of management, being over-run with thistles... ; but it is as we have before said the custom of the country to neglect the pasture lands, and will probably continue as long as the plough is so great a favourite",⁵¹

Good fortune allows the breaking down of crop acreages in 1795, 1801 and 1803 for various parts of Northumberland and gives some indication of regional patterns. Table 13:5 is the product of information from a variety

48 George Culley to John Welch, Aug. 14th 1801. NCRO/ZCU/6.

49 A.A., 1790, 14, p.254.

50 Greenwich Hospital Report, 1805. NCRO/NRO/467/42/2.

51 Ibid. p.163.

of sources.

Table 13:5

Changes in Grain Acreage 1795-1801/3 for
parts of Northumberland

		<u>WHEAT</u> Acres	<u>BARLEY</u> Acres	<u>OATS</u> Acres
TINDALE WARD (E.DIV.)	1795	3378	2301	6577
	1801	3156	2872	6679
TINDALE WARD (WHOLE)	1795	6801	8328	20337
	1803	8136	9103	20137
GLENDALE (E.DIV.)	1795	1507	1049	3811
	1801	2504	1565	3955
GLENDALE (W.DIV.)	1795	1313	1421	4177
(approx. for ⁽¹⁾ Branxton)	1801	2358	2053	4458
GLENDALE WARD (WHOLE)	1795	2820	2470	7987
(approx. for ⁽¹⁾ Branxton)	1801	4862	3618	8413
	1803	4302	2927	7661

(1) Branxton Parish was part of the West Division of Glendale Ward in Northumberland but was included with Cornhill, then in Durham, in the 1801 Crop Returns. An approximate crop acreage based on total acreage has been attributed to Branxton, using these Returns.

Sources: 1795 - NCRO/QSB/89/32.

1801 - Crop Returns, PRO/HO/67/8

1803 - E.Mackenzie, History of Northumberland, 1825, 1, p.222.

The indication is that in no part of the County did the acreage of the cheapest grain, oats, increase even moderately during this period. The acreage of barley, the next cheapest grain, rose very little except in Glendale Ward while that of the premier grain, wheat, even experienced a small decline in the east division of Tindale Ward between 1795 and 1801, and only proportionally small increases in Tindale Ward as a whole. There was a significant increase in wheat acreage in Glendale Ward, which,

combined with the barley increase there, must have meant an increase in total arable land. It is significant that increased arable acreage, even at a time of high grain prices, should be greater in an area of convertible husbandry, where turnips, after which barley was normally grown, were the most important arable crop, than in the area comprising most of the hills and much 'marginal' land of Northumberland.

The agricultural gloom and despondency so ostentatiously displayed by the farming lobby after the War and immortalised by Ernle,⁵² was hardly a true representation of the situation in Northumberland (see pp. 82-4). Certainly the sentiment was expressed that "a considerable proportion of the poor land, now under cultivation, will be laid to grass",⁵³ but similar feelings that this still remained to be done continued into the 1830s, suggesting that little conversion had taken place.⁵⁴ It was always the inferior arable land on which attention centred and it is doubtful whether much of the land converted to permanent arable use by 1816 in Northumberland was inferior. Northumberland was not naturally a grain-producing county - its wheat crop was unreliable and its barley not worth the malting⁵⁵ - though farmers had been keen enough to take advantage of rising grain prices. The real interest in arable in much of Northumberland when grain prices were not exorbitant, was in the production of turnips and artificial grasses with grain production as a necessary but secondary activity. Practical men were quick to criticise the theorists who complained that poor arable would

52 Lord Ernle, 'English Farming Past and Present', 1912.

53 Evidence of George Hopper of Black Hedley, 'Agricultural State of the Kingdom', 1816, p.239-40.

54 See, for example, Northumberland Quarterly Report, Jan.28th 1815, F.M., 16, 1815, p.126; the 1822 Greenwich Hospital Report by Edward Locker, PRO/ADM/79/60; and the evidence of John Langhorne of Berwick, 1836 House of Commons Select Committee Report on the State of Agriculture, p.179

55 Northumberland Quarterly Report, F.M., 8, 1807, p.262; and J.M.M^cCulloch, Statistical Account of the British Empire, 1837, vol.1, p.172. "Northumberland never had, and except in favoured localities is not, and can never excel as, a wheat growing district." Seymour Bell, Collections Relating to Agriculture, c.1860, NCL/L630.

have to be turned to pasture, pointing out that unless a great deal of money were spent on the conversion, pastures created from poor exhausted arable would become totally profitless brakes or wastes.⁵⁶ Moreover, there was the logical argument that the most obvious and probably the easiest way to offset the loss occasioned by a drop in market value was to increase production.⁵⁷ Whether this was happening in Northumberland is impossible to determine with any accuracy, but it is certain that the Greenwich Hospital Estate had experienced no contraction of arable by 1817 and was then still increasing its arable,⁵⁸ that farms on the Blackett-Ord Estate in the south-west were still in 1817 putting high land through the traditional process of a few years tillage before it was laid down to more or less permanent pasture,⁵⁹ and that farms on the Hepple Estate of the Riddells were still anxious in 1819 to plough out new ground in exchange for laying down old.⁶⁰ There is no better evidence for the period than this, but were it not for the laments of politicians, pamphleteers and those who offered to appear before Parliamentary Committees investigating agricultural distress, it is doubtful whether a contraction of arable would ever have been conceived of for this period in Northumberland.

It is possible by use of the 1803 Returns and with figures estimated by Thomas Bell for c. 1852 to glean some idea of the change in arable acreage in the County during the first half of the 19th century.⁶¹ It is

56 N.C., Feb. 2nd 1828.

57 M.C. Naish found that arable increased in the immediate post-war period on the Hampshire Chalklands and attributed the increase to this reason. M.C. Naish, *The Agricultural Landscape of the Hampshire Chalklands 1700-1840*, M.A. Thesis, London University, 1961, p. 307.

58 PRÓ/ADM/79/59.

59 Map of Krindledykes, NCRO/NRO/320.

60 Survey Book, 1819, NCRO/ZRW/301.

61 The c. 1852 figures are in NCRO/ZHE/34/1 and were produced by Thomas Bell, an active member of the Bell family of land surveyors and frequently in the service of the Fourth Duke of Northumberland and other great landowners in the County. His calculations were estimates, but Bell was certainly one of the best informed men in the County to make such estimates. They are undated, but on paper watermarked 1858 and as Bell died in 1860, they cannot be later than that date. However, they are probably considerably earlier. Nicholas Burnett presented some of these figures and an identical sketch map in an address to the Newcastle Farmers' Club on March 6th 1852 (L. & P., Bolbec, N630/6/2.) as an attack on the accuracy of Caird's yield figures for Northumberland

also, of course, possible to compare these earlier statistics with those of the agricultural censuses. The first of these has been avoided as being more likely to contain inaccuracies occasioned by unfamiliarity and that of 1867 has been used. While later censuses were probably even more accurate, their use might well have over-emphasised the arable changes of the late 1860's. The comparison of total county acreages of the chief arable crops is shown in Table 13:6. Unless Bell's estimates were completely inaccurate - and that is unlikely - there would seem to have been a very substantial increase in arable between 1803 and c.1852, followed by a decline to a figure still above the 1803 total in 1867.⁶²

Table 13:6

County Acreage of Chief Arable Crops

	1803 ⁽¹⁾ Acres	c.1852 ⁽²⁾ Acres	Change 1803-52 1803=100	1867 ⁽³⁾ Acres	Change 1803-67 1803=100
Wheat	43,134	62,500	145	38,357	89
Barley	24,089	40,500	168	28,743	119
Rye	1,527	?	-	251	16
Oats	77,277	97,242	126	69,798	90
Beans & Peas	5,713	15,500 ⁽⁴⁾	271	9,954	174
Turnips	26,741	58,476	219	50,881	190
Potatoes	4,639	6,950	150	4,934	106
TOTAL	<u>183,120</u>	<u>281,168</u>	<u>154</u>	<u>202,918</u>	<u>111</u>

Sources: (1) AC/Y/IV/2/b/5. Parts of Northumberland included in Durham in 1803 are fortunately covered by the 1801 Crop Returns and these figures have been included here. Figures do not survive for Holy Island and no estimation has been made.

(2) NCRO/ZHE/34/1.

(3) PRO/MAF/68/139.

(4) Including tares.

printed in the Times in 1851. Consequently it is not unreasonable to date Bell's statistics at c.1852.

⁶² The idea of a cereal peak in the mid-1850s concurs with that expressed by E.L.Jones, 'The Changing Basis of English Agricultural Prosperity', Ag.H.R., 10, 1962, p.110.

That there should have been an arable decline from the mid-1850s can excite no surprise in the light of well documented reaction to continued very low grain prices after the Crimean War,⁶³ but it seems that this arable decline may have been far from evenly spread over the County. A comparison of the change in crop acreage by parish between 1801 and 1867⁶⁴ reveals reductions on the thin soils of central Northumberland and on the high ground of the south and west, but increases in the north, south-east and along the coast (see Map 13:2). Map 13:2 is somewhat misleading in giving undue predominance to the decline in small areas of arable in the highlands. This impression may be rectified by Table 13:1 illustrating the comparatively small arable acreages of some of the highland parishes and by Map 13:3 showing the arable loss or gain between 1801 and 1867 as a proportion of the total parish area. The indication is that major decline in arable was limited to central Northumberland. Maps 13:4, 13:5 and 13:6 show the percentage change in acreage of wheat, barley and oats between 1801 and 1867. The reduction in the small acreage of all three main grains in the western highlands is much less important than the same process happening with the much larger acreages of central Northumberland. No other areas experienced such overall decline.

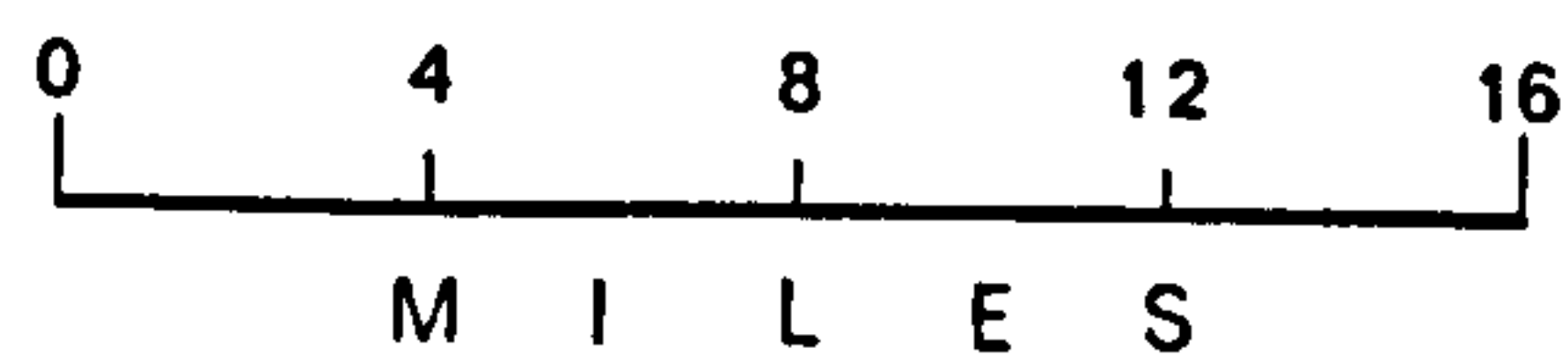
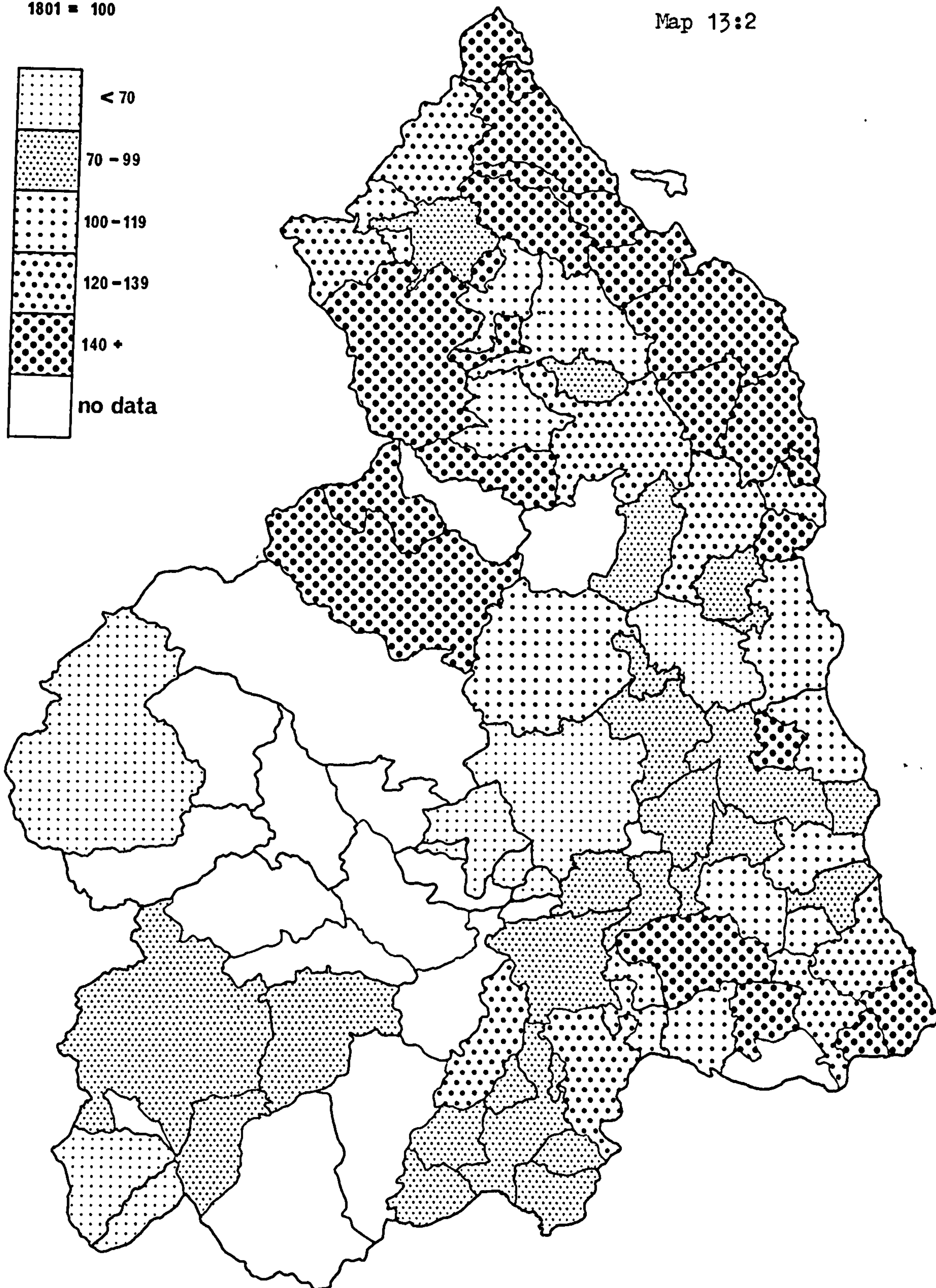
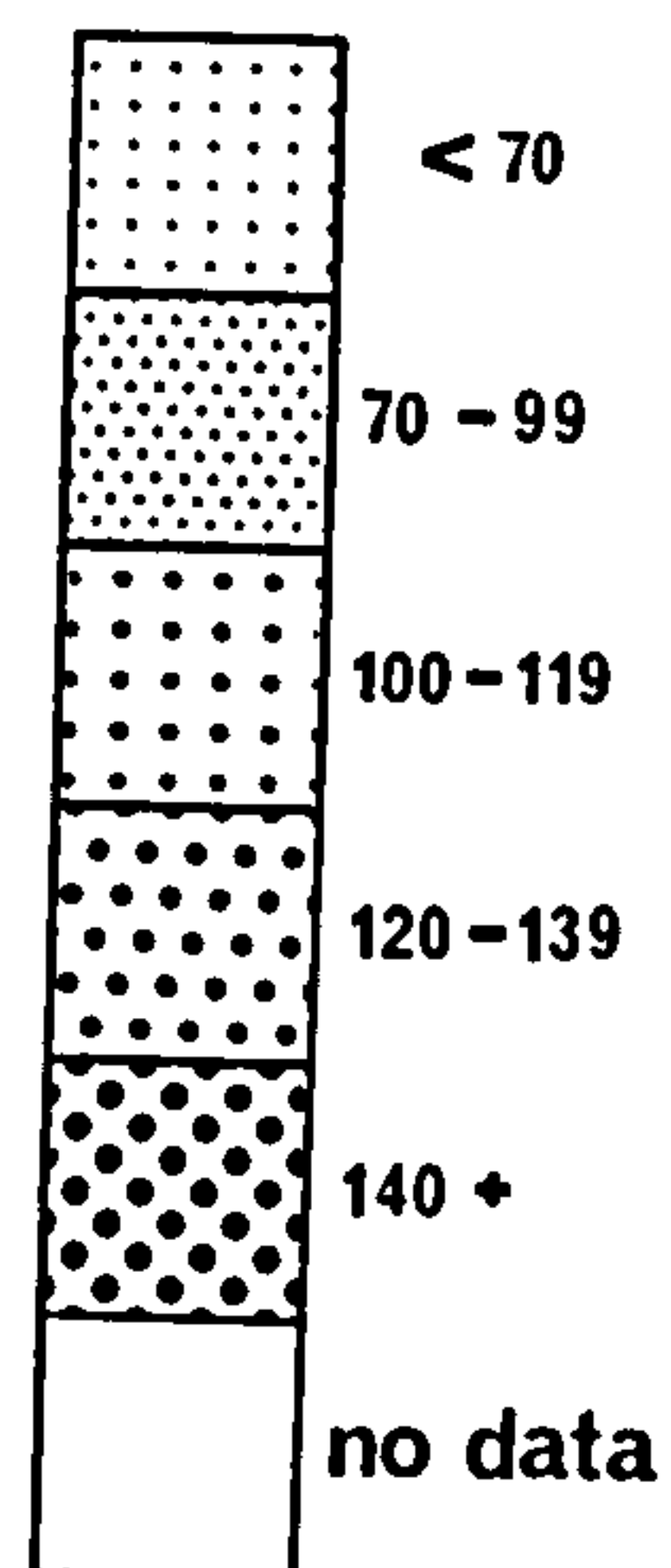
Map 13:6 reveals remarkably little fluctuation in oat acreage with the exception of declines in the south-west and in the central area. The wheat acreage, shown on Map 13:4, experienced more widespread contraction, but it was again most serious in the south-west and centre. Increased wheat acreage occurred only in scattered areas of good wheat land, largely along the coast. Map 13:5 again reveals serious decline in the south-west and the central areas of the County, this time in the growth of barley. Further interpretation of this map is best made in

63 See particularly the address of Thomas Lawson to the North of England Chamber of Agriculture on 'The Conversion of Poor Arable Land into Pasture' when it met at Morpeth in 1865. Seymour Bell, Collections Relating to Agriculture, NCL/L630.

64 The crops recorded in the 1801 Returns are wheat, barley, oats, rye, beans and peas, turnips and potatoes. These crops were also identified

1801 = 100

Map 13:2

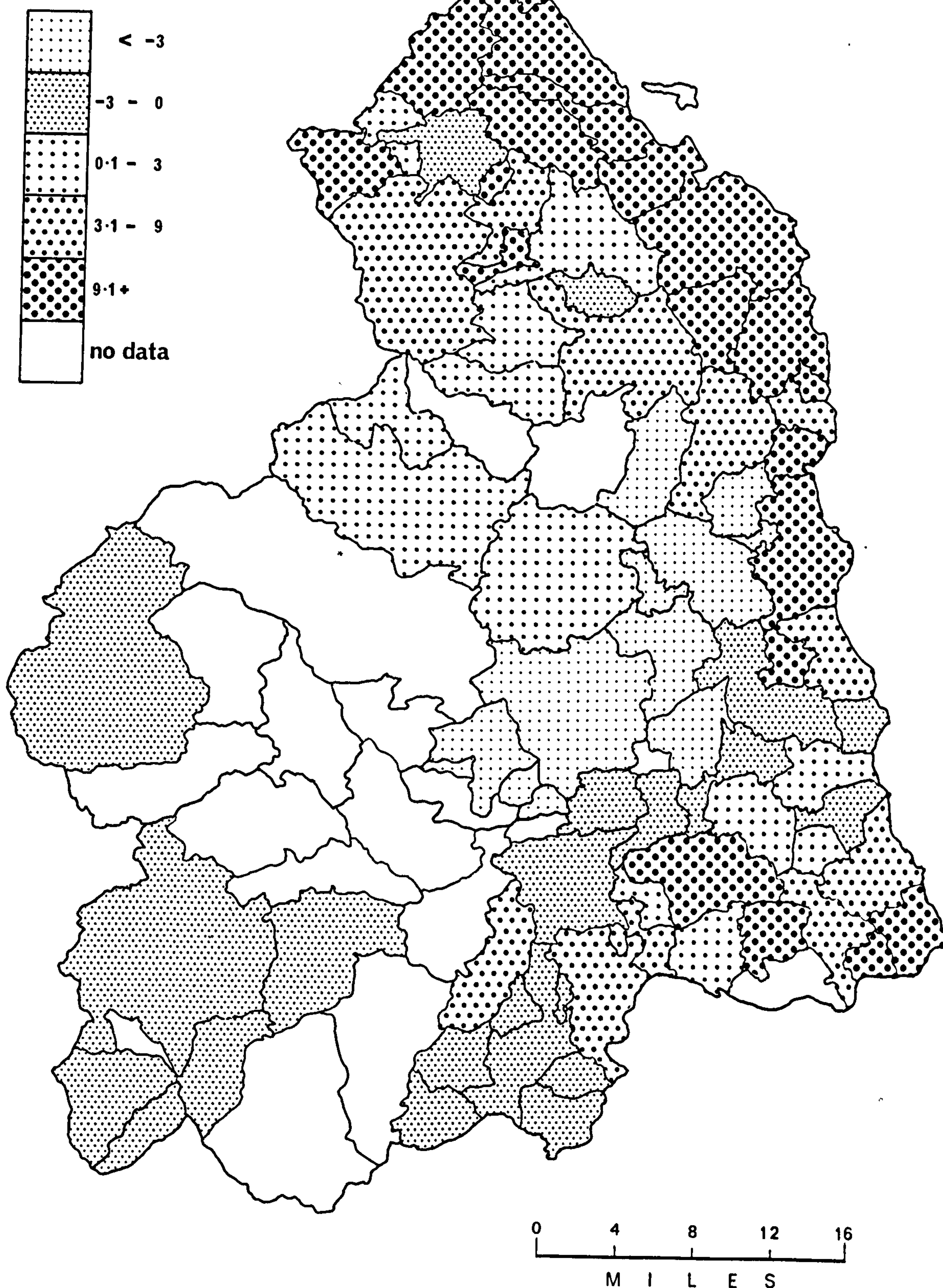


Change in Total Arable Crop Acreage by Parish between 1801 and 1867.

Sources: 1801 Crop Returns, PRO/HO/67/8.
 1803 Returns, John Hodgson, History of Northumberland,
 1832, 2(2, 3).
 1867 Agricultural Census, PRO/MAF/68/139.

1801 = 0

Map 13:3

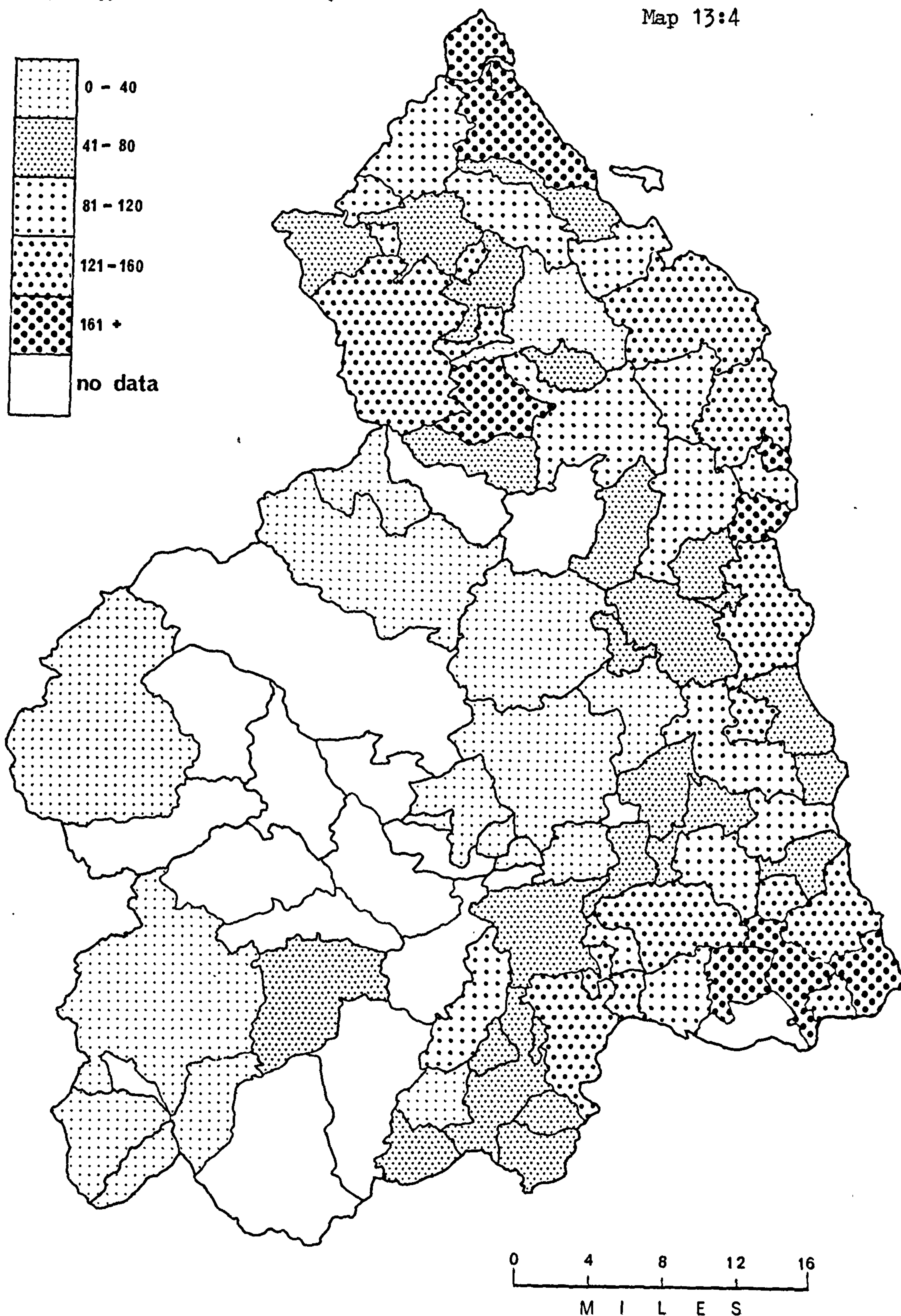


Arable Loss or Gain as Percentage of Total Parish Area between
1801 and 1867.

Sources: 1801 Crop Returns, PRO/HO/67/8.
 1803 Returns, John Hodgson, History of Northumberland, 1832,
 2(2, 3).
 1867 Agricultural Census, PRO/MAF/68/139.
 W.Whellan, Directory of Northumberland, 1855.

1801 = 100

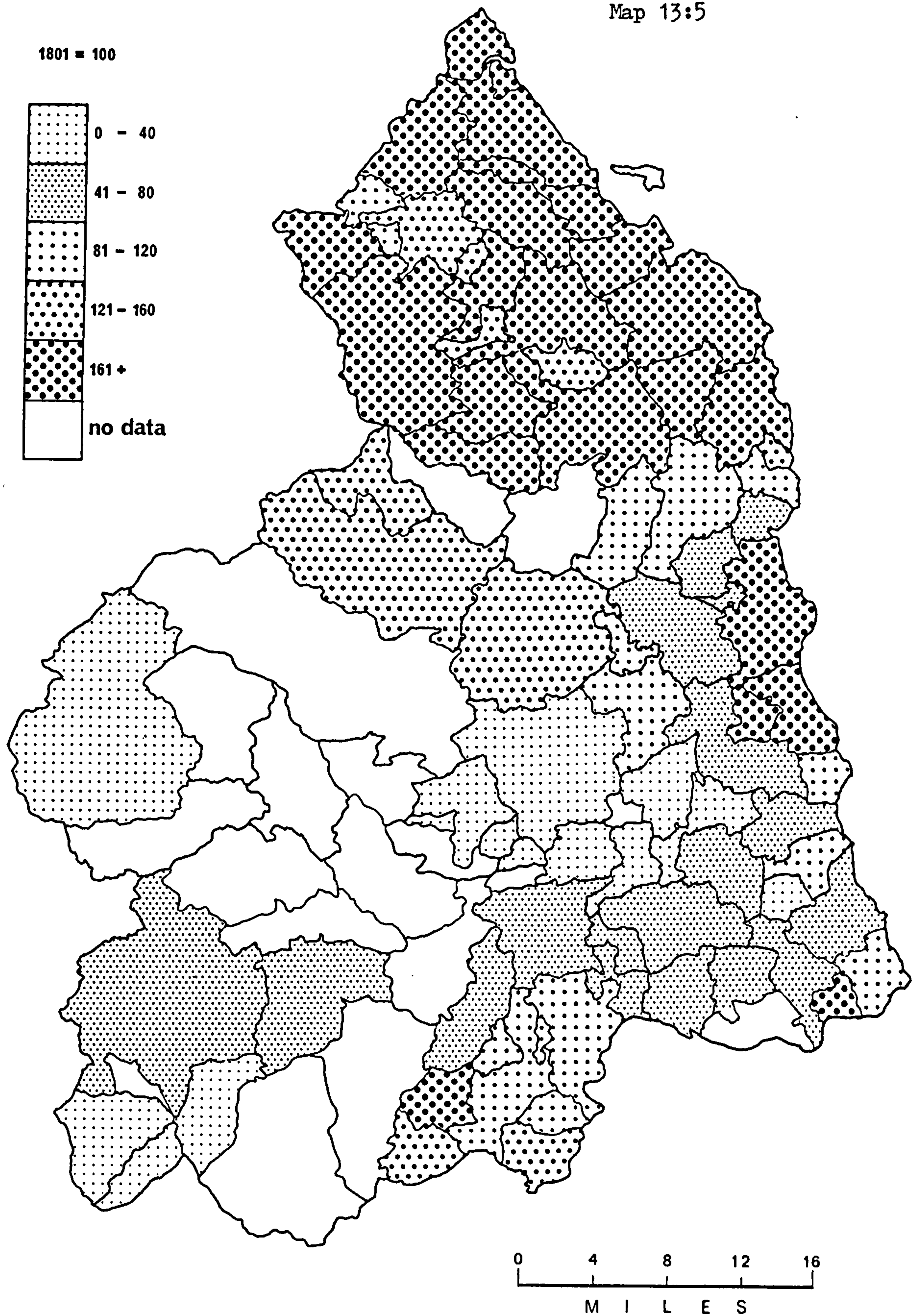
Map 13:4



Percentage Wheat Acreage Change between 1801 and 1867, by Parish.

Sources: 1801 Crop Returns, PRO/HO/67/8.
 1803 Returns, John Hodgson, History of
 Northumberland, 1832, 2(2, 3).
 1867 Agricultural Census, PRO/MAF/68/139.

Map 13:5

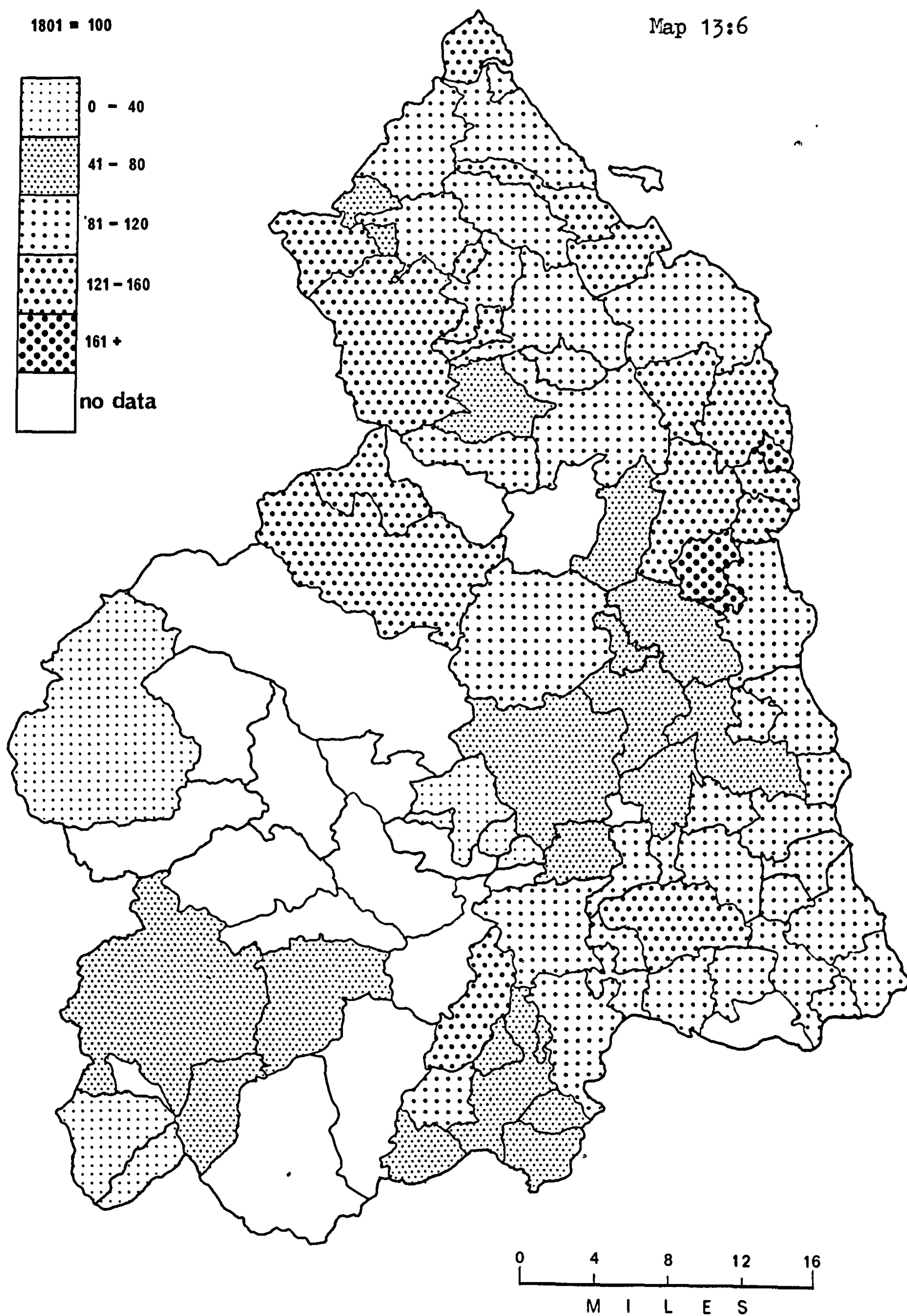


Percentage Barley Acreage Change by Parish between 1801 and 1867.

Sources: 1801 Crop Returns, PRO/HO/67/8.
 1803 Returns, John Hodgson, History of
 Northumberland, 1832, 2(2, 3).
 1867 Agricultural Census, PRO/MAF/68/139.

1801 = 100

Map 13:6



Percentage Oat Acreage Change by Parish between 1801 and 1867.

Sources: 1801 Crop Returns, PRO/HO/67/8.
 1803 Returns, John Hodgson, History of
 Northumberland, 1832, 2(2, 3).
 1867 Agricultural Census, PRO/MAF/68/139.

conjunction with Map 13:7, showing turnip acreage as a proportion of total crop acreage in 1801 and Map 13:8 showing the change in turnip acreage between 1801 and 1867. Glendale Ward was clearly the bastion of turnip growth in the County at the beginning of the century (Map 13:7) with very few turnips being grown in the south. The increase of turnip acreage (Map 13:8) was greatest in the north-east and throughout the south, areas where few turnips had been grown in 1801. The spread of turnips throughout the north was as part of a five course convertible rotation incorporating barley as a following crop; hence the massive increase in barley acreage experienced by this region between 1801 and 1867 (Map 13:5). But in the south-east, the spread of turnips was to portions of the fallow of lands light enough to grow turnips, the only lands which had been growing barley in this area. Here turnips virtually replaced barley as a crop on lighter lands. The uniform decline in the acreage of all three main grain crops in central Northumberland and the south-west in conjunction with moderate increases in turnip acreages, confirms that serious arable decline occurred here and suggests that arable became more useful for the production of stock food than human. Only in Kirkwhelpington and Falstone was there a total decline in all arable land use, a decline predicted about 1840 in the tithe files for these areas, but which had not then taken place.⁶⁵

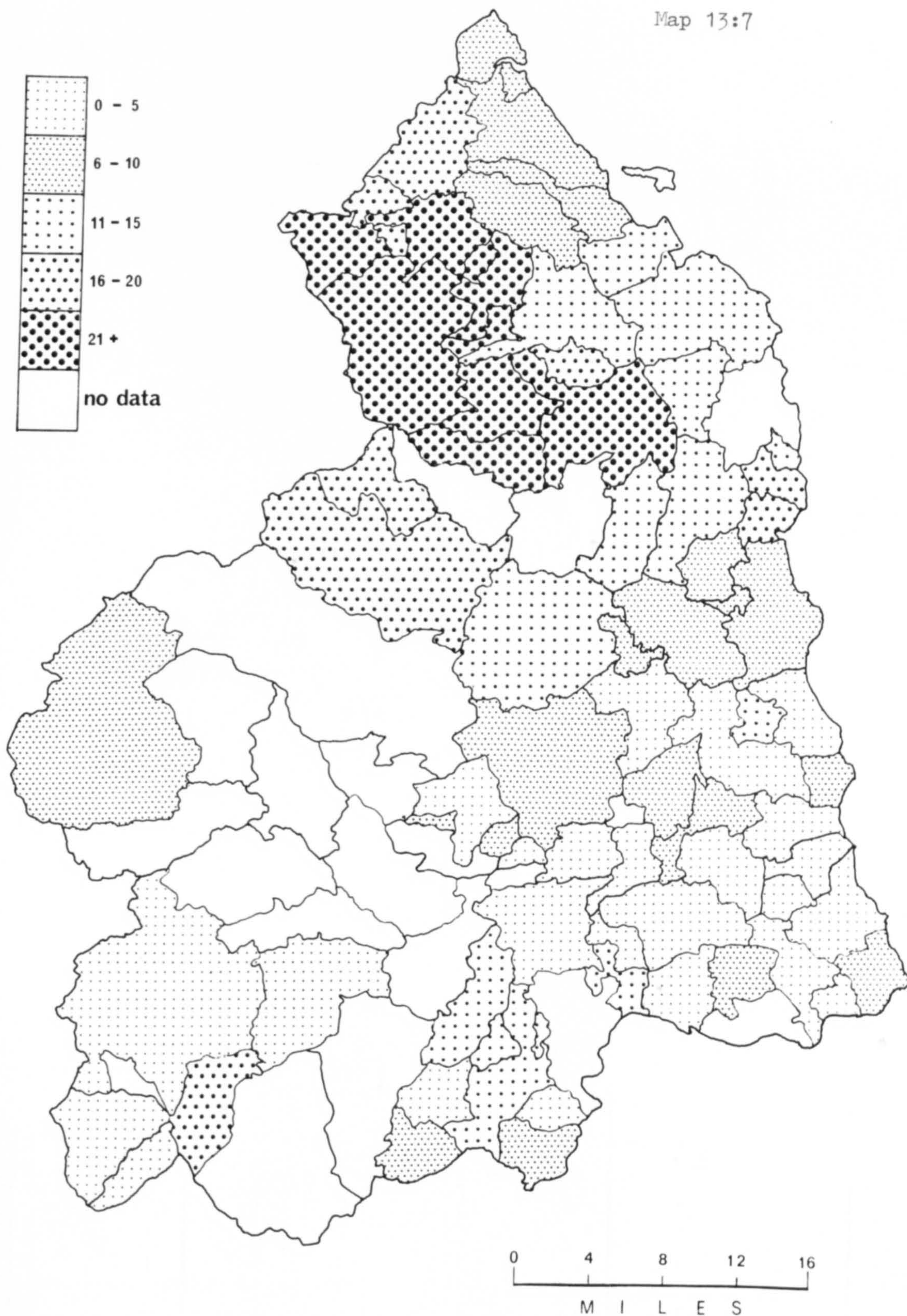
The State of Farms Reports of the Duke of Northumberland,⁶⁶ available from 1827, can be used to determine the proportion of arable on about 118,000 acres of the Duke's land. Figure 13:1 shows the acres of tillage, including clover, turnips and naked fallow but not grass two or more years old, as a proportion of total acreage for various areas

in 1867, with swedes included in the turnip figures. There were no other important arable crops in Northumberland, and little rye was cultivated at either period.

65 See the tithe files for Plashetts, West Whelpington, Greystead, Coldwell, Little Harle, West Harle, Kirkwhelpington, Fawns, Capheaton, Catcherside, and Great Bavington. PRO(A)/IR/18/7178, 7287, 6998, 6911, 7010, 7011, 7090, 6974, 6879, 6870, 6801.

66 The figures were produced by the bailiffs for each separately-let unit, from large farms to cottage allotments. Some years are missing, many entries are incomplete, and no attempt was ever made to add the

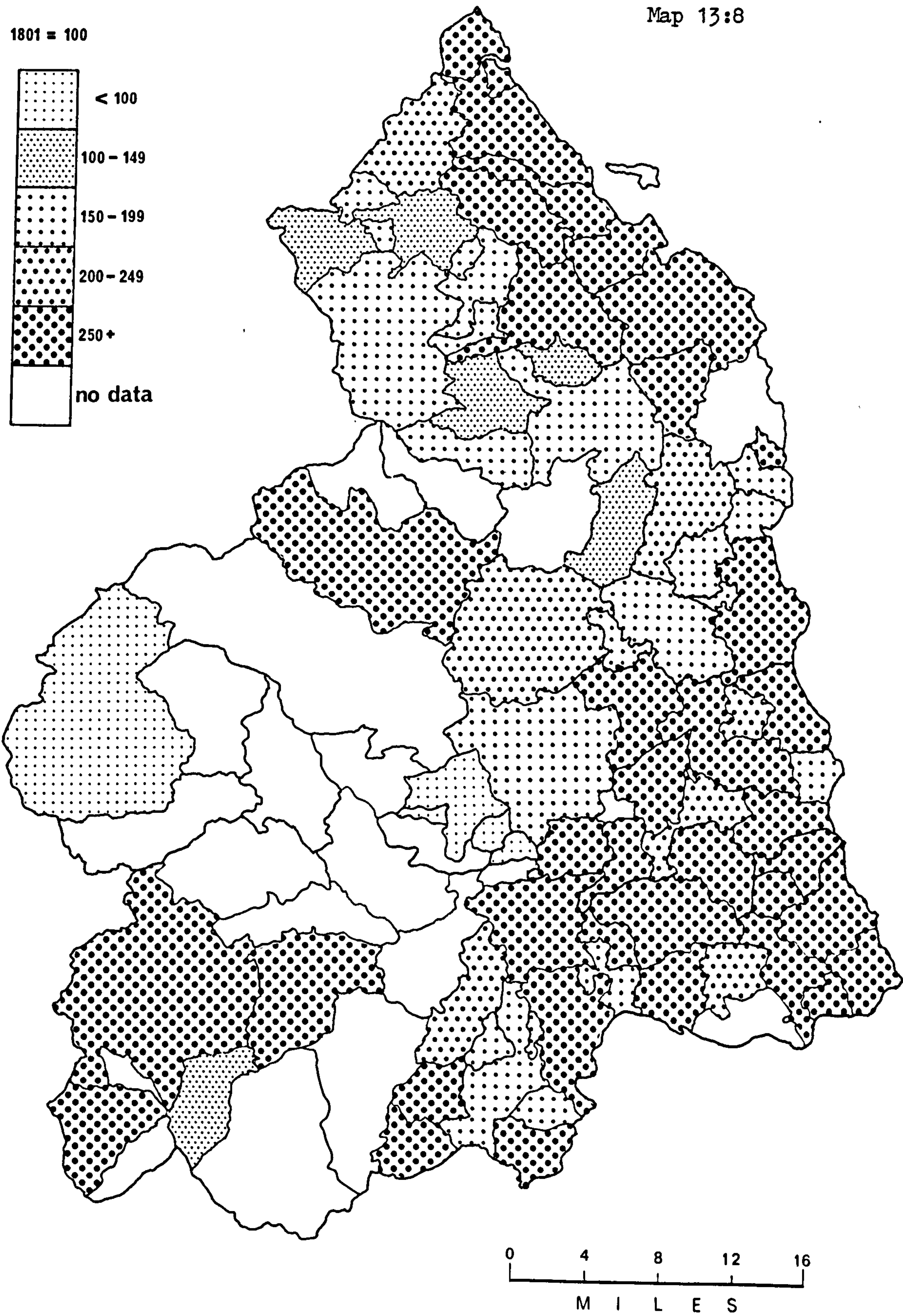
Map 13:7



Turnip Acreage as Percentage of Total Crop Acreage by Parish,
1801.

Sources: 1801 Crop Returns, PRO/HO/67/8.
1803 Returns, John Hodgson, History of
Northumberland, 1832, 2(2, 3).

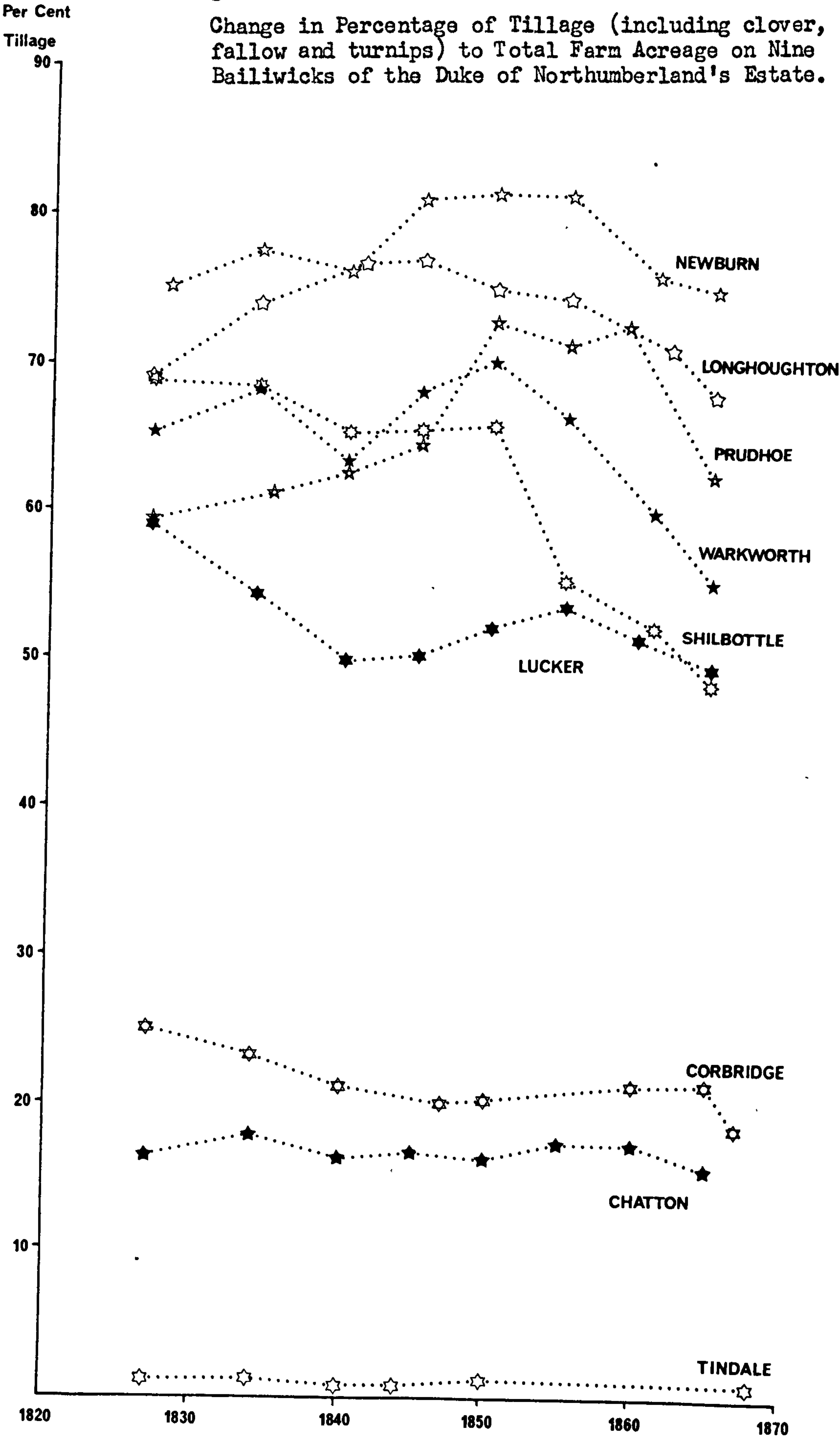
Map 13:8



Turnip Acreage Change by Parish between 1801 and 1867.

Sources: 1801 Crop Returns, PRO/HO/67/8 (including some 1803 Returns in John Hodgson, History of Northumberland, 1832, 2(2, 3)).
1867 Agricultural Census, PRO/MAF/68/139.

Figure 13:1



Source: State of Farms Returns, 1827-65. AC, Middle Room.

Maximum and minimum total acreages for each bailiwick 1827-65.

(See Figure 13:1)

	Acres	
Newburn	2920	- 3149
Longhaughton	5251	- 6396
Prudhoe	4677	- 4929
Warkworth	3209	- 4088
Lucker	8787	- 9091
Shilbottle	4953	- 5825
Corbridge	7559	- 8888
Chatton	18332	- 19451
Tindale	42899	- 59745

for which the figures are reasonably complete and where they are comprehensible. Corbridge, Chatton and Tindale, with large areas of old grass, maintained a fairly constant proportion of arable over the period from 1827, but the six more arable bailiwicks, although they display a degree of variety in their trends, certainly show no diminution in arable between 1827 and 1850, but a definite decline from about this date to 1865. Of 117,944 acres for which an intelligible record was made of their use, 26,774 acres (22.7%) were in tillage in 1850. In 1865, the use of 118,965 acres could be discerned and 23,191 of these (19.5%) were in tillage. Hence there seems to have been a decline in tillage of something over 14% on the Duke's Estate between 1850 and 1865. This does not approach the decline implied in the comparison of Bell's figures with those of the 1867 census (27.8%), and suggests both that the decline continued steeply after 1865 and that Bell's estimates were probably too generous.

If there was an increase in Northumberland arable between 1803 and 1850, as seems to be indicated, the figures from the Duke of Northumberland's Estate suggest that much of this must have taken place before 1827. It seems probable that the remaining War years witnessed an arable increase, but

figures. Consequently, no check could ever have been made on the figures and the bailiffs did not feel the necessity to adopt a uniform procedure. For example, on any one return, one farm may have its tillage listed inclusive of turnips and fallow, and the next exclusive of them. The only way to use the figures reliably is to check them for each individual farm and to discard those of which there is any doubt.

unlikely that they were responsible for the whole rise. What is more feasible is that the years after 1815 saw a continued increase in arable cultivation, and what is still more certain is that the 'depression' of these years could hardly have prompted a decline in arable land use. It has been shown that agricultural insolvency was neither common nor localised between 1816 and 1836. How then did farmers, especially those working the poorest arable lands, manage to survive? It would seem that they must have opted for the easiest and most obvious course of increasing production by extending arable. The alternative generally suggested by the theorists, of converting poorer arable land to permanent pasture, was a course of action which both robbed the tenant of what profit there was in grain cultivation and subjected him to the immediate expense of conversion when he was least able to bear it. No evidence has been found of the sort of landlord assistance in laying down met with after 1850. It seems likely, therefore, that a greater extent of grain, particularly wheat, was grown in order to combat low prices after 1815. Grain prices were not perpetually low in the years following; there were periods of moderate, even good prices (see p.286), a feeling at least of security was engendered by Protection, and most landlords obliged with rent abatements or reductions (see pp.66-7). This solution was easiest for good wheat land or good barley land and Maps 13:4 and 13:5 show a marked increase in barley on the established barley lands of the north (Map 13:5) and a similar increase in wheat on the County's best wheat lands, in the south-east and along the coast, where wheat had long been the most important crop (Map 13:4). But on the poorer soils, the position was more complicated.

"On a thin clay soil wheat must be the staple crop to make money of, even though the prices may sometimes be low. It is best adapted for the soil, and to sow oats on this sort of land more than once in four years is sure to result in bad crops - so bad,

that frequently the yield per acre will be as many bolls of wheat as of oats. Barley on such a soil is out of the question..."⁶⁷

What may have been more important in promoting an increase in arable during the period 1815-50 was the spread of methods of livestock production by means of arable. The increase in turnip acreage between 1803 and c.1852 has already been shown as has its relatively insignificant decline between c.1852 and 1867. Map 13:8 suggests that virtually all areas were anxious to increase turnip cultivation and it is clear that turnips were being grown in many parts of the south-east far from naturally suited to them (see p.320). Colbeck commented on this trend in the County in 1847. "... the increase in cattle is in the face of many thousand acres of grass land having been brought under the plough: thus proving the striking fact, that we now can, with much less grass land than formerly, actually feed more cattle as well as grow more corn."⁶⁸ Seymour Bell confirmed the unusual importance of the role of turnips in Northumberland arable. "... our variable climate places us at a disadvantage in the growing and winning of cereal crops, but it gives us the prominence in roots."⁶⁹ It is clear that stock numbers increased greatly during the first half of the 19th century (see pp.234-6) and that this increase was dependent not simply on arable cultivation in the growth of turnips, but also on a change from permanent grassland to rotation grass. Temporary grass was considered as early as 1801 to be the bulwark of Northumberland farming and the main difference between it and "that system of husbandry which is pursued in many parts of the kingdom, to the southward of us, and which appears to proceed from a greater attachment to the opinions and customs of our ancestors, than we can here afford to entertain".⁷⁰ The attitude of W.H.Sitwell was typical when he complained about 1840 that the Barmoor estate was well

67 Essay on crop rotation by 'Talpa', 1864, Seymour Bell, Collections Relating to Agriculture, NCL/L630.

68 T. Colbeck, p.437.

69 Seymour Bell, Collections Relating to Agriculture, c.1860, NCL/L630

70 'A Northumberland Farmer', F.M., 2, 1801, pp.307-8. See also a paper given by William Glover, 'On Breaking-up Grass Land', Newcastle Farmers' Club, Nov.6th 1847. L. & P., Bolbec N630.6/1.

behind the rest of the region in that 90% of the old grass was "worse than bad straw" and should have long since been converted to rotation grass.⁷¹ The Tithe Files indicate that the Northumberland five-course rotation, incorporating two year's temporary grass and sometimes extended to a six or seven course with extra years of temporary grass, had spread through-out the northern half of the County by about 1840 (see Map 15:11). As turnip acreage increased in this region between 1801 and 1867 and as turnips occupied only one year of a five-course rotation, this must mean that considerable quantities of permanent pasture became incorporated in arable rotations. It could not have meant the decrease of existing grain acreage by the inclusion of temporary grass in the arable rotation. In the south, the four-course rotation largely prevailed with turnips occupying an indeterminate percentage of the fallow and it is not possible to declare that an increased turnip acreage automatically meant an increased total arable acreage.

The conclusion that must be reached is that those areas which experienced the only significant arable decline between 1801 and 1867 were the thin clay lands in the centre of the County, the area in which extensive turnip cultivation and convertible husbandry were not possible, which could not grow barley and was therefore consigned to suffer low prices for diminishing yields of poor grade wheat, or soil exhaustion from over-cropping of oats. But it would seem that even in these areas farming income was sufficient to ensure solvency and probably not sufficiently low to force so drastic a change in land use as the conversion of arable to pasture until after 1850. It was even suggested that low-rented poor farms were particularly in demand in Northumberland despite their unprofitability in that they were somewhere cheap for hard-pressed farmers to keep stock and utensils together until opportunity favoured them.⁷² Such men could not be expected to treat the land kindly and it

71 W.H.Sitwell to Francis Sitwell c.1840. NCRO/NRO/470/53.

72 'Talpa', op.cit.

was often the situation that the poorest clay soils had been so exhausted by over-cropping that they were too infertile to produce good permanent grass and had to continue in arable.⁷³

After the psychological blow of 1846 and, more practically, the continued low corn prices following the Crimean War, it would seem that a great deal of arable was converted to permanent pasture. Modern drainage methods meant that such conversion was likely to render profitable pasture rather than merely waste,⁷⁴ and landlords frequently gave financial assistance to tenants to lay down arable.⁷⁵ Professor Wilson's account of Northumberland agriculture provides example after example of this process in operation, including an illuminating note on Mr. Anderson's estate at Little Harle. "He was induced at an early date (1841) to convert a large proportion of the tillage land on the estate to permanent grass, as he found that, at the elevation, (600 feet) at which his property laid, the cereals could not so successfully be cultivated as the grasses."⁷⁶ Drainage could also mean a new lease of arable life for clay farms, but generally only in areas where it was also worth using artificial fertilizer. This expense was not warranted on the low-yielding arable lands of the centre of Northumberland.

It is argued that high corn prices were always felt to be temporary in nature and were as conducive to production of the highest priced grains as to an overall increase in arable. Low corn prices, as long as there was reason to hope they would not continue low for ever, were initially an incentive to increase arable and eventually the reason for maintaining this arable, even in areas unsuited to any particular crop. In the 18th century, the pressure to increase arable had come from the tenants and arable continued to be regarded by the bulk of them as the most profitable manner of farming in the 19th century. Indeed, the

73 Seymour Bell, Collections Relating to Agriculture, NCL/L630.

74 See, for example, Mr. Harrison of Belsay's comment on Thomas Lawson's paper (op.cit.) that "it would be throwing money away to lay down land in grass unless it was first thoroughly drained".

75 Bell reckoned that £4 per acre for lime and seeds was a reasonable sum for Northumberland landlords to pay. Seymour Bell to Hugh Taylor, Sept. 15th 1859. Collections Relating to Agriculture, NCL/L630.

exhausted state of some arable land and the expense of conversion to pasture, particularly drained pasture, proved prohibitive until positive financial help was given by landlords to convert. This assistance did not occur until after mid-century when it became increasingly clear that grain prices would not rise, and when the means were available for extensive draining. The 19th century also witnessed the increasing popularity of a new sort of arable based on turnips and temporary grass rather than grains and even less dependent on corn price as a regulator of its extent. In that there is some evidence for the continual expansion of the arable acreage of Northumberland between 1750 and 1850, there are grounds for looking at the development of Northumberland agriculture during this period as a single positive process rather than a series of jumps halted by periodic recessions, and for studying, as far as the sources will allow, the progress of innovation within that continual process rather than as various separate occurrences, each peculiar to parts of it.

76 Prof. John Wilson, reprint of articles in Newcastle Daily Chronicle, July 1864, on NCRO/ZSW/Additional and Miscellaneous, dated Capheaton, Sept.1st 1964.

XIV

Livestock

The production of livestock in Northumberland was of particular importance not just in the upland areas where little arable cultivation was carried on, but also as an integral part of the arable rotation system, whether it was the extended five course practised in the north of the four course with only a single year of temporary grass often used in the south of the County. Livestock was essential to that circular system which required dung to grow crops including fodder to feed animals to produce dung. But the 18th century improvers argued against the use of animals as mere manure machines perpetually subservient to the grain crops they fertilized. The development of the turnip as a field crop and of improved artificial grasses meant that stock could not only be fed over the 'hungry gap', but also brought to a controlled and reliable maturity. Hence, it was worthwhile from the second half of the 18th century to make great efforts to ensure that the right kind of stock was being kept to make most efficient and profitable use of the new conditions.

Though little meat was consumed by rural workers in Northumberland, the reverse was true of the well-paid workers in the industrial areas of the south-east of the County. With the development of coal mines, coastal shipping and Tyneside industry came a growing demand for meat. In 1800, George Culley remarked that "Beef is much higher & scarcer than Mutton. That both are much dearer at Morpeth than Wakefield, & that the above dearness in mine & other peoples opinion, arises from the Coal Trade entirely. Consequently that meat is at present sold higher at NCastle & Sunderland, than anywhere else in the Island London excepted"¹. Morpeth was probably the third largest market for fat stock in the country, after Smithfield and Wakefield, serving not only a Northumberland demand, but much of that from the industrial towns of south Yorkshire and both jobbers

1 George Culley to John Welch, May 15th 1800. NCRO/ZCU/6. See also May 21st 1800 and George Culley to Warren Hastings, May 23rd 1800. BM/Add.Mss./29177/f.272.

and butchers from Edinburgh to Wakefield scoured Northumberland for stock even before it came to market.²

In 1794, Sir John Sinclair noted that "owing to the high price of wool, and the constant demand for sheep and cattle, both at the Edinburgh and Morpeth markets, nothing has paid better for many years past",³ and Sir John Delaval made the comparison that "one pound of the best butchers meat generally worth more than two pounds of the best white bread - in plentiful years it is sometimes 3 or 4 pounds",⁴ Accompanying this realization of the profitable potential of stock came the dogma, the in-and-in breeding ideas of Bakewell in Leicestershire and Colling in Durham, and in Northumberland the doctrine of small bone and rapid fattening.⁵ To what extent ordinary farmers followed the lead of such professional improvers will be considered in detail later, but a report of a Tweedside Agricultural Society meeting of 1815 is a harbinger of the dangers in assuming even the greatest demand for the most improved stock. "It was observed that since the institution of the society, the Leicester sheep had improved in the quantity of the wool, as well as in robustness, and were more suited to all the vicissitudes of our climate, than the delicate, pettled, pampered animals which were exhibited some years ago. There is an error in refining too much... It is to be hoped that this hint will not be lost on the breeders of our horned cattle."⁶

By 1800 it could be said that "the agriculturists in Tyneside, and other parts of Northumberland, were amongst the most eminent in the kingdom, and nowhere had the breeds of stock been more improved, or more numerous herds exhibited".⁷ By mid-century, the Northumberland farm

2 Joseph Oxley to Sir John Delaval, March 3rd 1765. NCRO/2DE/4/10/6. George Culley to John Welch, Jan.10th 1801. NCRO/ZCU/6. William Todd to George Silvertop, Dec.12th 1812. NCRO/ZCO/9/1.

3 Sir John Sinclair, Statistical Account of Scotland (Kelso Parish, Roxburgh), 1794, 10, pp.578-9.

4 Sir John Delaval, Notes on Agricultural Improvement, 1793-1805. NCRO/2DE/44/7.

5 George Culley, Observations on Livestock, 1801, p.178.

6 N.C., Oct.14th 1815.

7 Thomas Bell, History of Improved Short-Horn Cattle, 1871, p.117.

producing both grain and green crops and fattening livestock could be regarded as a factory with its animals working as reliably and efficiently as machines.⁸ It is this increase in the efficiency and profitability of livestock husbandry which seems of most importance and the changes which brought it about most deserving of further attention.

Sheep

Sheep seem to have been of much more importance in Northumberland than any other type of livestock. Their manure was reckoned to be of more value than that of any other animal,⁹ and there existed in the County both a growing industrial market for mutton and the means by which local flocks could be improved to produce more of the right sort of mutton more quickly and, therefore, more economically.

Northumberland sheep breeds of the mid-18th century consisted of hardy Blackface (the Heath breed) on the hills of the south and equally sturdy Cheviots on the higher land in the north.¹⁰ On the lower lands throughout the County were the Mug sheep, an exceedingly woolly, slow-feeding, gangling breed with short¹¹ or medium length wool.¹² In the northern coastal area existed a larger breed with longer wool sometimes known as the Bamburghshire and the result of frequent crossings with the Lincolnshire.¹³ It would seem that this large coastal breed, valuable for both meat and long wool, was regarded as the most improved breed in the County in the mid-18th century and that it still retained its advocates in the early 19th century.¹⁴ There was certainly a steady demand for Lincolnshire sheep in parts of Northumberland in the 1770s.¹⁵ Arthur

8 George Kirk, 'Philosophy of Stall Feeding', J.N.A.S., 1846, p.90.

9 George Culley to John Welch, Jan.10th 1801. NCRO/ZCU/6.

10 Bailey and Culley, 1805, pp.144-50.

11 F.M., 4, 1803, pp.303-4.

12 Bailey and Culley, 1805, p.150.

13 F.M., 4, 1803, p.304.

14 F.M., 5, 1804, pp.454-6; 6, 1805, pp.45-6.

15 A.A., 27, 1797, p.184; F.M., 3, 1804, p.307; N.C., Sept.19th 1778.

Young gave little information about Northumberland sheep breeds, but from his estimation of their average fleece weight, it can be deduced that long-wooled sheep were to be found only in the Belford area and the lower parts of Glendale.¹⁶

Culley claimed that it was he who first introduced the Dishley (Bakewell, Culley or New Leicester) breed of sheep to Northumberland in 1766.¹⁷ Culley had first hired a Dishley tup from Bakewell in 1763,¹⁸ and had let tups of this improved breed in Northumberland some time before his removal from County Durham to Glendale in 1767,¹⁹ a practice in which he was not, even then, alone.²⁰ It seems that the northern coastal area was little interested in the Dishley sheep at this period, and concentrated on improving its own breed with fresh imports from Lincolnshire. In 1761, thirty tup lambs were sold at Cheswick "got by two very curious ones from Caister, in Lincolnshire",²¹ and other tups at Thornton were said to have just come from that county.²² More in this region are less specifically defined as being "of the large sort".²³ Where the Dishley sheep made most headway was in those areas where the Blackface, Cheviot or Lincoln type did not prevail, where the only competition was the Mug sheep.²⁴

The advantage of the Dishley sheep was that it could be fattened in two years rather than the more normal three.²⁵ and so satisfied Culley's basic requirement of producing "the most Money from a given Quantity of Food".²⁶ The Dishley was a small sheep with short legs, barrel-like body, long wool, thin pelt and small bones.²⁷ Its invaluable property of being

16 Arthur Young, Northern Tour, 1770, 3, pp.65 & 78.

17 Bailey and Culley, 1805, p.150. 18 Pedigree of Culley Sheep, 1797, NCRO/ZCU/33.

19 F.M., 4, 1803, p.307.

20 F.M., 4, 1803, p.309; N.C., Sept.5th 1767, Sept.3rd 1768.

21 N.C., Sept.12th 1761.

22 N.C., Oct.3rd 1761.

23 N.C., April 30th 1763; June 25th & Oct.8th 1768; April 20th 1761.

24 A.A., 20, 1793, p.32.

25 George Culley to Sir John Sinclair, July 1792. NCRO/ZCU/2.

26 Notes by John Bailey annotated by George Culley, c.1791. NCRO/ZCU/3. See also George Culley, op.cit., 1801, p.178.

27 Bailey and Culley, 1805, p.150.

able to make meat cheaply and quickly has tended to gild some of its other properties with an undeserved merit. Though Bakewell had probably used Lincoln blood in the original breeding of the Dishley, the wool of the Northumberland Dishley had been entirely sacrificed to its mutton. In 1792, George Culley wrote to Sir John Sinclair, "I do not know that any of our Breeders in this County have attempted to improve the Fleece in quantity or quality, what effect the present advance on long wool may have I know not, but we are so thoroughly convinced of the benefit of good Carcases that whatever wool we grow, we must attend to carcase in the first place, & inclination to feed..."²⁸ though he sometimes attributed low prices and lack of interest in wool to the great distance from the woollen manufacturers of both England and Scotland.²⁹ The Northumberland Dishley was a meat-producing animal, growing less wool than most other long-wooled sheep,³⁰ and that generally of less value.³¹ Nor was the meat it produced of good quality. It was coarse and sometimes so over-fat that it required specialised methods of cooking.³² Locally it became known as 'coal-heavers' mutton,³³ and those of more discerning palate refused to eat it.³⁴ But the Dishley was a mass-production animal designed to satisfy the demands of rapid turnover. It was designed to feed not the few gentlemen, but the mass of industrial workers.³⁵ "To weak appetites it is not so inviting as the leaner mutton, but it finds a ready market amongst the manufacturing and laborious part of the community, who necessity has taught to lay out their money to the best advantage..."³⁶ "And tho' the Mutton fed upon the Mountains may have the finest flavour, it is this Nutritious kind that Satisfies the hunger

28 George Culley to Sir John Sinclair, June 1792. NCRO/ZCU/2.

29 A.A., 19, 1793, p.149.

30 J.R.M^cCulloch, Statistical Account of the British Empire, 1837, 1,p.500.

31 George Culley, op.cit., 1801, p.102.

32 John Ogilby to George Culley, May 17th 1803.NCRO/ZCU/25. See also George Culley, op.cit., 1801, p.108.

33 F.M., 4, 1803, pp.165-7.

34 F.M., 4, 1803, pp.400-1.

35 F.M., 4, 1803, p.310.

36 George Culley,op.cit., 1801,p.108.

of our Manufacturers, at the cheapest rate."³⁷ Some critics of the Dishley also complained that it grew meat "upon the least valuable parts; legs and saddles, not shoulders and breasts, being the favourable parts".³⁸ If some consumers complained, so too did some butchers that the Dishley sheep did not contain as much tallow as other sheep.³⁹ Farmers also noted that the Dishley held only half the usual weight of tallow,⁴⁰ but Culley reckoned the tallow given away and the animal more profitable without.⁴¹

If any one asset justified the high agricultural reputation of Glendale, it was the Dishley sheep and no one man did more to encourage the diffusion of Dishley blood than George Culley. Culley farmed at Fenton and later at other locations in Glendale between 1767 and his death in 1813 and made a great deal of money through the breeding and feeding of Dishley sheep and the letting of Dishley tups. In 1801 he proclaimed, "Sure I am we have made more of sheep than any other article we ever dealt in?".⁴² Culley was a long-standing personal friend of Bakewell and bred almost exclusively from Bakewell stock.⁴³ His exceptions were made for purely practical reasons. Farmers who had long placed value on large sheep were not to be immediately converted to rearing dwarfs and Culley had early followed a suggestion made at Dishley in 1765 to "keep fast hold of the little Sheep, but at the same time to put a few Ewes to a great tup by way of suiting all sorts of Customers",⁴⁴ and to this end had almost certainly absorbed Teeswater blood into his stock.⁴⁵ While Bakewell satisfied a national market of other breeders, so too did Culley, but to a much lesser extent. Culley was also interested in catering for a local Glendale and Northumberland demand and argued that "we have a much better chance f^m Mr. B. letting at such extravagant prices. none but tup

37 George Culley, Notes for a History of the Fat Wether, 1788.NCRO/ZCU/31.

38 W.Marshall, 'On the new Leicestershire Sheep', in Georgical Essays, ed. A. Hunter, 1803, pp.386-403.

39 George Culley, Journal of a tour into Leicestershire, 1771.NCRO/ZCU/1.

40 A.A., 19, 1793, p.537.

41 George Culley to Sir John Sinclair, June 1792. NCRO/ZCU/2.

42 George Culley to John Welch, Aug.14th 1801. NCRO/ZCU/6.

43 George Culley to John Bailey, April 27th 1789. NCRO/ZCU/31.

44 George Culley, Journal of Tour into Leicestershire & South England, 1765.

45 George Culley to Thomas Dawson, n.d., NCRO/ZCU/44. NCRO/ZCU/1.

men can come to Dishley, none else can afford it, & we can do very well with less prices... ".⁴⁶ Yet even Culley was able to ^{claim that he} let tups at 80 guineas a season in 1789,⁴⁷ though no tup had let in Glendale for more than 3 guineas before his arrival.⁴⁸

The success of the Dishley in lowland Northumberland was impressive. By 1790, Culley could claim, "Perhaps we can find no district in this island, of the same extent as the county of Northumberland, and the Borders of Scotland, taken collectively, where the Dishley breed of sheep have spread so rapidly, and taken such entire possession. Very few of the old breed remain, and even these are giving way on all hands".⁴⁹ A report of 1793 still talked of Northumberland lowland sheep as "Mug sheep" but "much improved by the Messrs Culleys and others, by their introducing the Leicester, or Bakewell rams".⁵⁰ By 1795, Dishley sheep were reported to dominate the lower parts of Glendale and were "even creeping up many of the lower Hills",⁵¹ and by 1802 they were said to have "spread into all or most of the Southern parts of Scotland & up the Riversides".⁵² When a Mr. Parkinson applied to Culley in 1795 for sheep larger than the usual Dishley, he was forcefully told "If you want larger you must apply to the County of Durham or near the Teeswater, because we have no larger in this district".⁵³

Map 14:1 gives some idea of the limited distribution of Dishley blood in the whole County of Northumberland up to the time of Culley's death. It also marks the locations of sheep shows where Dishley tups could be hired and of those tup-letters who were members of Culley's Northumberland Tup Association. This society was a short-lived affair started in 1792 in imitation of the Leicestershire one, with which it was

46 George Culley to Matthew Culley, Oct. 24th 1784. NCRO/ZCU/9. See also R. Trow-Smith, A History of British Livestock Husbandry 1700-1900, 1959, p. 198.

47 George Culley to Matthew Stephenson, Oct./Nov. 1789. NCRO/ZCU/31.

48 George Culley to Mr. Colhoun, July 9th 1790. NCRO/ZCU/31.

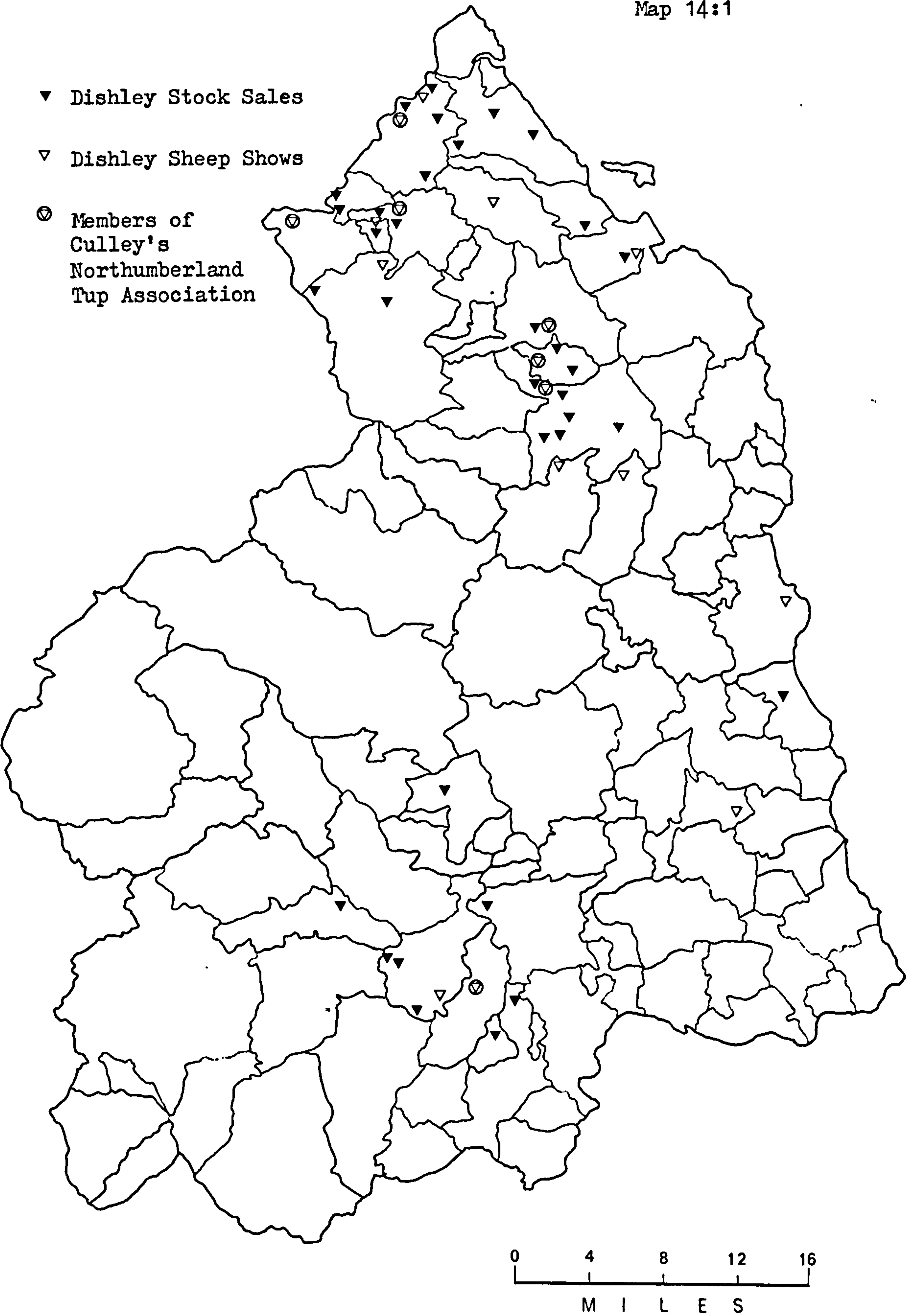
49 A.A., 14, 1790, p. 474. 50 A.A., 20, 1793, p. 32.

51 George Culley to Mr. Menzies, Sept. 18th 1796. NCRO/ZCU/31.

52 George Culley to John Welch, Sept. 24th 1802. NCRO/ZCU/6.

53 George Culley to Mr. Parkinson, Aug. 7th 1795. NCRO/ZCU/31.

Map 14:1



Distribution of Dishley Sheep during Culley's Lifetime.

Source: Newcastle Courant to 1813.

to have exclusive dealings.⁵⁴ Ostensibly the motive was to maintain the purity of Dishley sheep; in reality it was to inhibit competition in tup letting from other Northumberland breeders and to this end the Association was composed of only 10 members, all Culley's immediate friends or relatives.⁵⁵ Culley had always been neurotically anxious to avoid his draft ewes falling into the wrong hands and had adopted the policy of fattening them himself rather than the usual one of sending them south,⁵⁶ and had insisted that butchers be seen to slaughter these drafts.⁵⁷ Yet it would seem that the diffusion of Dishley blood had already proceeded too far by the 1790s and demand had become too great for such a crude restrictive policy to have been successful. Farmers in Berwick, Coldstream and Alnwick banded together to boycott the Association,⁵⁸ and a Dishley breeders' co-operative was formed in opposition in 1793.⁵⁹ A letter of 1793 from Northumberland commented on "a tup society in this district, that are, as I understand nearly on the same footing with the Leicestershire one. They sell no tups nor ewes, nor, as I hear, let any sheep under certain prices, and certain restrictions; but it is lucky the country is independent of them..."⁶⁰ Local hostility to Culley's vain attempt to restrict the spread of what had proved to have been a successful innovation forced him to end the Association in 1793,⁶¹ and to apologise to his customers.⁶² Map 14:1 suggests most strongly that early diffusion of Dishley blood in Northumberland was centred on Culley's own personal activities and on those of a few close colleagues. It is an excellent historical example of the role played by the individual farmer in stimulating and propagating agricultural change.⁶³

54 D.J. Rowe, 'The Culleys, Northumberland Farmers, 1767-1813', Ag.H.R., 19, pt.2, 1971, pp.164-5.

55 N.C., July 14th 1792.

56 A.A., 19, 1793, p.309.

57 Matthew Culley to John Welch, Oct.6th 1799. NCRO/ZCU/6.

58 N.C., June 16th, 30th & Aug.4th 1792.

59 N.C., June 1st 1793.

60 A.A., 19, 1793, p.537.

61 Nathaniel Stubbins to George Culley, Jan.10th 1794. NCRO/ZCU/18.

62 Copy circular in George Culley's hand and signed 'John B.', dated Wooler, Aug.6th 1795. NCRO/ZCU/20.

63 See Stuart Macdonald, 'The Role of the Individual in Agricultural Change: The Example of George Culley of Fenton', in *Change in the Countryside*, ed. R.A.Butlin and H.S.A.Fox (forthcoming).

Although sheep manure was much valued in Northumberland, the system of folding as understood in the South, by which sheep depastured one area in the day and were hurdled at night on another area destined to grow crops, was hardly known in the County,⁶⁴ and there was no general interest in what Culley termed the 'folding breeds'.⁶⁵ By the end of the 18th century other perquisites from sheep, such as the ewes' milk, were being sacrificed in favour of its more major attributes.⁶⁶ The salving of highland sheep with a mixture of butter grease and thick Virginia tar to help them withstand the winter also disappeared in the early 19th century, the regular advertisements for both these commodities no longer being printed in local newspapers after the first decade of that century.⁶⁷ By 1823 it could be said that "smeared fleeces, both of the Cheviot and Black-faced breeds, scarcely find purchasers... From the experience of this and former years, it has become of great importance to our store-farmers, to dispense with smearing whenever it is practicable, or to find some substitute for the tar, which so much reduces the value of the wool".⁶⁸ On the most exposed walks, where salving was sometimes still thought necessary, more gentle preparations than tar were found⁶⁹ and more use was made of dipping.⁷⁰

Tracing the diffusion of Leicester blood after Culley's death until the mid-19th century is difficult, though Map 14:2 showing the location of stock sales which involved Dishley or part-Dishley sheep, makes the attempt. It is difficult because it became increasingly recognised that the value of the Dishley lay not so much in thoroughbred stock as in a cross with other breeds, particularly the Cheviot and the Blackface. Culley had met great resistance from Cheviot farmers when trying to tincture their sheep with Dishley blood and they had even turned down his offer to supply tups free of charge,⁷¹ a refusal which brought the

64 A.A., 17, 1792, p.351.

65 Bailey and Culley, 1805, p.186.

66 Bailey and Culley, 1805, p.154; A.A., 27, 1797, p.193.

67 N.C., Oct.8th 1785; Aug.24th 1793; Sept.5th 1795; Sept.23rd 1797; Sept.7th 1799; Nov.6th 1802; Oct.15th 1803; Sept.8th 1804; Aug.11th 1810. See also A.A., 27, 1797, p.194 and Nicholas Hoppen to George Culley, March 10th 1794. NCRO/ZCU/19.

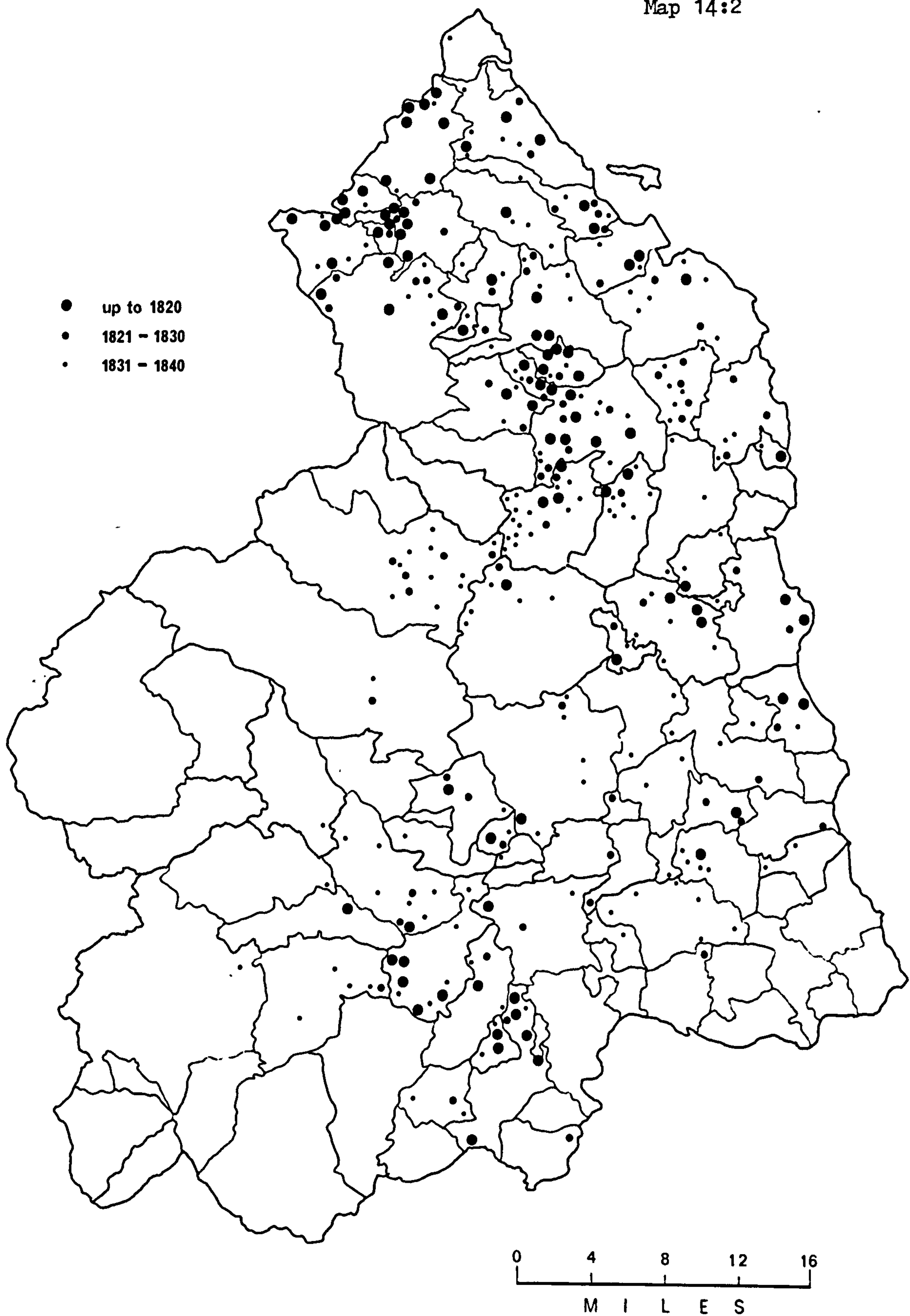
68 F.M., 24, 1823, p.356.

69 N.C., Sept.17th 1831.

70 Samuel Donkin to Newcastle Farmers' Club, Sept.2nd 1848. NCRO/ZHE/34/17.

71 George Culley to Arthur Young, Dec.8th 1790. NCRO/ZCU/3.

Map 14:2



Distribution of Dishley Blood.

Source: Newcastle Courant Stock Sales Advertisements to 1840.

accusation that "The Farmers on the Mountains are only in an unenlightened State, much behind, some of their Neighbours".⁷² It was not until 1800 that a cross between a Dishley ram and a Cheviot ewe was used to produce a hardy sheep with quick-fattening properties on the best Cheviot sheep walks.⁷³ Though Cheviot breeders were slow to incorporate Dishley blood, they were not to adopt Culley's method of improving their own stock. In 1795, Thomas Smith of Woodhall announced that he was to show Cheviot tups to let in order to instill that "Spirit of Emulation by which ... the Leicestershire are arrived to their present improved State".⁷⁴ Two years later the Society for the Improvement of Cheviot Sheep was formed in direct imitation of Culley's Association.⁷⁵

Terminology also makes the diffusion of Dishley blood amongst Cheviot and Blackface sheep difficult to trace. Blackface sheep were often termed 'short' sheep and Cheviots 'long' as a consequence of their body length, but their wool having the opposite characteristics leads to a measure of confusion. So too does the terminology of the late 19th century which calls a Leicester-Cheviot mixture a 'Half-bred' and a Leicester-Blackface mix a 'Cross',⁷⁶ for the period up to 1850 knew no distinction, the terms 'half-bred' or 'cross' being used indiscriminately to refer to any sheep containing part Dishley blood.⁷⁷ Consequently, Map 14:2 can show only the spread of Dishley influence though it is known that much of this was among Blackface and Cheviot flocks.

Map 14:2 shows fairly clearly the spread of Dishley blood from the main Glendale centre and secondary ones in the Warkworth and Hexham areas to surrounding areas of higher land. This progression is particularly noticeable in central Northumberland and the Alwinton region. Map 14:3 shows the situation between 1841 and 1850 and reveals a much more complete diffusion of the blood throughout the County. Progress in the south-east

72 Matthew Culley to John Welch, Feb.18th 1802. NCRO/ZCU/6.

73 Thomas Lawson to Newcastle Farmers' Club, April 7th 1860. L. & P., Bolbec, N630.6/3.

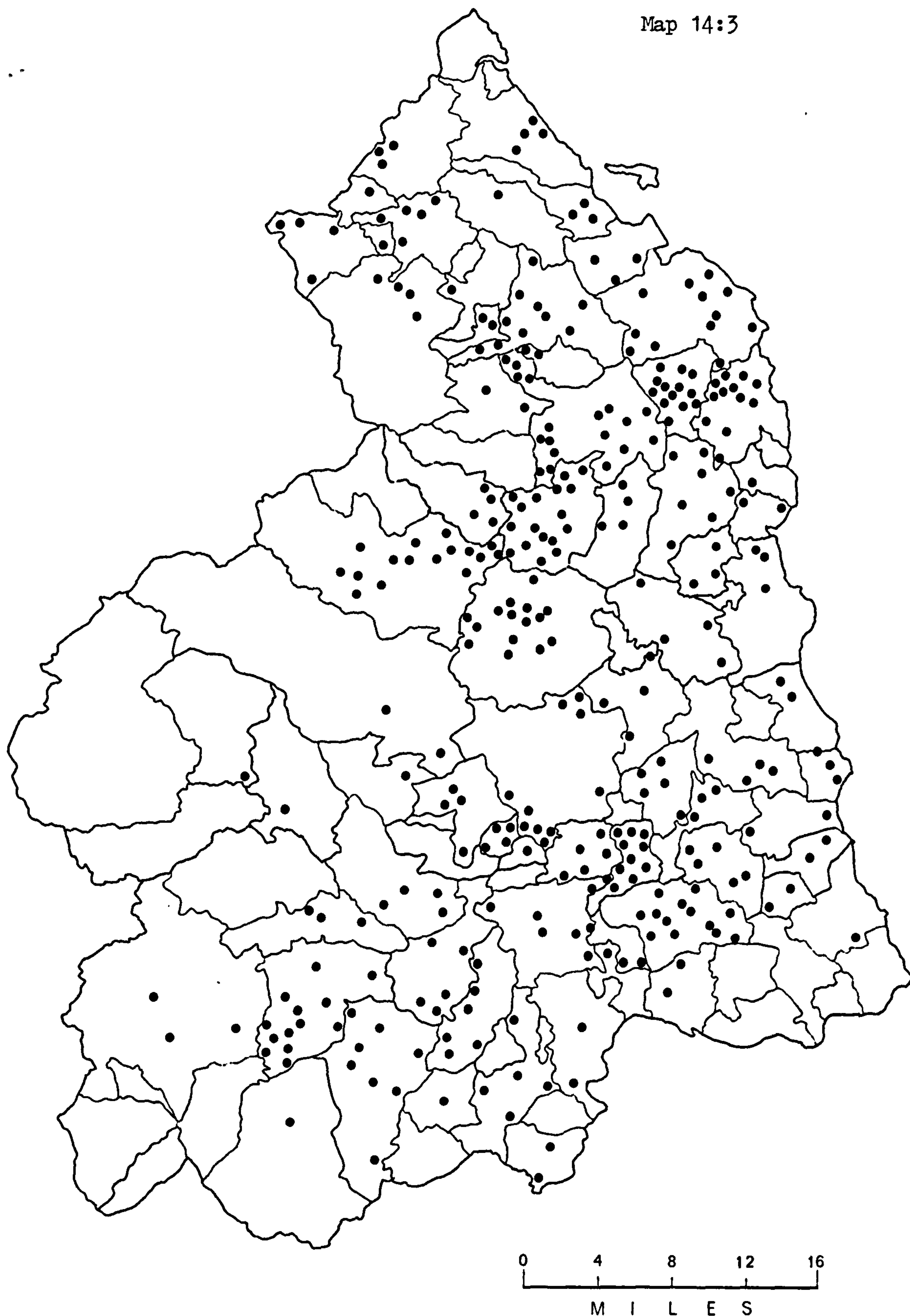
74 N.C., Aug.29th 1795.

75 N.C., Aug.12th 1797.

76 e.g. Robert Wallace, Farm Live Stock of Great Britain, 1885.

77 For example, the stock sale advertisement for Clennells, Alwinton, N.C., April 28th 1843; or that for Glanton, April 18th 1845.

Map 14:3



Distribution of Dishley Blood, 1841-1850.

Source: Newcastle Courant Stock Sales Advertisements,
1841-50.

is especially marked and suggests that land previously thought too heavy for the health of sheep and for the growth of turnips was being used more extensively for the keeping of short-term stock. Figure 14:1 shows the percentage of total stock advertisements mentioning Dishley blood and confirms the steady growth in popularity of the Dishley factor, particularly in the late 1830s and throughout the 1840s.

Despite trials of many other breeds of sheep, no breed seems to have matched the qualities of the Dishley. The twice-yearly lambing property of the Dorset⁷⁸ was used to produce lambs to satisfy the Christmas demand in Newcastle,⁷⁹ and sporadic interest was shown in the South Downs.⁸⁰ Merinos are known to have graced more aristocratic flocks from at least 1780,⁸¹ but there was always great reservation about the hardiness of the Merino⁸² and a general conviction that foreign sheep were bound to deteriorate in other lands.⁸³ A Merino-South Down cross seems to have met with some favour around the turn of the century,⁸⁴ but there is no evidence of this having become widespread before 1850. In 1848 a shipment of 120 Belgian sheep arrived for sale in Newcastle;⁸⁵ of their breed and fate nothing is known. The shows of agricultural societies made available limited numbers of even the most exotic breeds,⁸⁶ but these seem to have had little or no impact on the general scheme of Northumberland sheep husbandry.

Increased meat and wool yield resulted from the use of Dishley tups on some other breeds. In Scotland it was reckoned that while Blackface lambs brought 10/- per head, those produced by a Dishley ram averaged 24/-,⁸⁷ and it was claimed, rather sweepingly, that "all upland improvements tend to make the Cheviot breed supplant the Blackface; and again,

78 N.C., May 4th 1771.

79 George Culley, op.cit., 1807, p.130.

80 N.C., Aug. 3rd 1799 and Nov. 1st 1800.

81 John Hall to Sir John Delaval, March 17th 1780. NCRO/2DE/4/53/25.

82 N.C., May 18th 1811.

83 N.C., May 23rd 1789.

84 N.C., Sept. 22nd 1792; Sept. 19th 1807; Sept. 9th 1809; Feb. 16th & April 13th 1811; Aug. 22nd 1812.

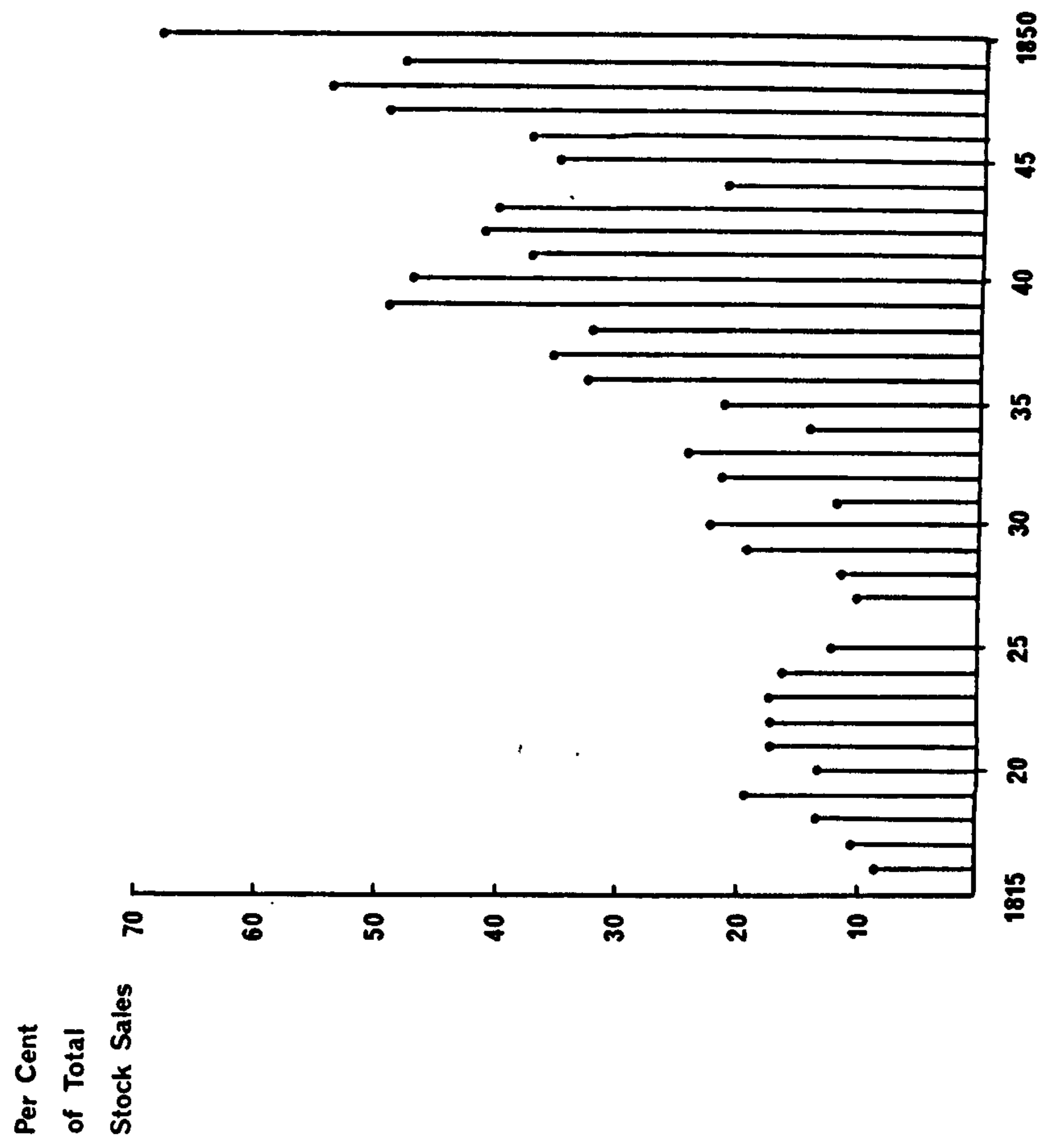
85 N.C., July 14th 1848.

86 e.g. The sale of the British Wool Society's experimental flock near Edinburgh. N.C., Sept. 28th 1793.

87 G. Murray, 'The Improved Value of Scotch Sheep', J.R.A.S.E., 2nd series. 3.

Figure 14:1

Percentage of Total Stock Sales Mentioning Dishley Blood.



Source: Newcastle Courant Stock Sales Advertisements, 1816-1850.

the half-Leicester supplants the Cheviot and the full-bred Leicester goes on extending its range".⁸⁸ Perhaps so in general terms, but the Blackface replaced the Cheviot between 1850 and 1860 in the upper Wansbeck⁸⁹ and by 1852 the mutton of the pure-bred Leicester was worth less than that of any other breed.⁹⁰ The remarkable fattening properties of sheep with Dishley blood is suggested by the performance of 5 Leicester wethers bought at 21 months by the Duke of Northumberland from Kelso for fattening at Alnwick between March 1845 and January 1846. During that time they increased their average weight from 12 stone 8 pounds to 22 stone 2 pounds.⁹¹ But the days when even the Dishley was generally fattened to such proportions were over. There was no longer a market for sheep with 7 inches of fat on their backs at 4 years old.⁹² Indeed, as early as 1806 it had been virtually impossible to find any wether 4 years of age in Northumberland so general had the fashion become even then for rapid feeding.⁹³ In the second half of the 19th century the pure-bred Border Leicesters "ceased to be bred for the butcher, for the joints are too large and the mutton too fat for the table - genteel or otherwise. The breed is now kept for the production of rams which are mated to Cheviot or Blackface mountain ewes. The latter breeds being small and lean, the large fat Border Leicester is just what is required to produce a popular sort of mutton".⁹⁴ This was exactly what was happening in Northumberland during the first half of the 19th century, what Samuel Donkin called "the growing Disposition amongst ourselves in Northumberland, to tincture the Blood of the Leicesters, by a Cross with the pure Cheviots".⁹⁵ Put simply, percentage of Leicester

1867, p.575.

88 James Sanderson, 'Agriculture of Berwick and Roxburghshire', Trans. High. and Ag. Soc., 1862, p.354.

89 John Wilson, 'Northern Farms and Farming', 1864, p.7.NCRO/ZSW/Add.Misc.

90 William Dickinson, 'The Farming of Cumberland', J.R.A.S.E., 13, 1852, p.263.

91 J.N.A.S., 1847, pp.40-1.

92 George Culley, Notes for the History of the Fat Wether, 1788.NCRO/ZCU/31.

93 John Carr to Mr. Townson, March 29th 1806. NCRO/2DE/4/60/14.

94 J.A. Scott Watson and M.E.Hobbs, Great Farmers, 1937, p.150.

95 N.C., April 27th 1849.

blood tended to decrease as altitude increased⁹⁶ and there was a growing disenchantment with the pure Dishley as an economic sheep. When John Grey sold his pedigree Dishley stock in 1842, he was most disappointed at the low prices he received.⁹⁷

Sheep numbers seem to have increased considerably during the first half of the 19th century. Culley suggested in 1790 that this was happening towards the end of the 18th "Tho more & not less ground is under the Plow. I speak of the Increase in the low Country, & long Wooled Sheep, as its probable little alteration has or can be made in N^{os} in the Hill Country".⁹⁸ A comparison of sheep totals derived from the Militia Returns of July 1803 with those from the Agricultural Census of July 1867 in Table 14:1 indicates that this increase gathered momentum and was probably no longer confined to lowland areas, wards containing substantial proportions of high ground recording a considerable augmentation.

Table 14:1

<u>Wards</u>	<u>Total Sheep Numbers</u>		<u>change 1803- 100</u>
	<u>1803</u>	<u>1867</u>	
Newcastle	-	1,351	-
Berwick	891	1,549	173
Bamburgh	43,338	61,931	143
Morpeth	20,851	68,507	329
Castle	11,692	21,212	181
Glendale	73,875	111,703	151
Coquetdale	150,659	240,395	160
Tindale	(* 150,241?) 50,241	330,463	658 (* 220?)
TOTAL	(* 451,547) 351,547	837,101	238 (* 185?)

Sources: 1803 - E. Mackenzie, History of Northumberland, 1825, 1, p.221.

1867 - Agricultural Census. PRO/MAF/68/139.

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- 96 Samuel Donkin to Newcastle Farmers' Club, Sept.2nd 1848; NCRO/ZHE/34/17 and John Grey, p.175.
- 97 N.C., Sept. 23rd 1842.
- 98 George Culley to Arthur Young, Dec.8th 1790. NCRO/ZCU/3.

The County total for 1803 found in Alnwick Castle⁹⁹ comes to exactly 100,000 more than that given by Mackenzie and the inordinately large rise in Tindale numbers suggests an omission of this order,¹⁰⁰ but whether the increase by 1867 was 138% or 85%, it still dwarfs that of any other livestock during the period¹⁰¹ and is matched only by a similar increase in the acreage under turnip (see p. 320), with which there was no doubt an intimate connection.

Though the Dishley was not reckoned as a wool-producing breed, it did bear long wool weighing about 8 pounds per fleece compared with the 3 pounds or so of both the short-wooled Cheviot and the longer-wooled Blackface.¹⁰² Hence a Dishley cross not only improved fattening properties but also quantity of wool in the case of the Cheviot, and both quality and quantity in the case of the Blackface. Culley showed little interest in wool production and was content to attribute any improvement in the quality of Dishley wool to the Northumberland climate rather than to stock improvement.¹⁰³ Indeed, he could hardly be blamed for his apathy towards wool. John Naismyth agreed in 1797 that "As the nature of the wool market has not been such as to distinguish the finest wool by an adequate price, the inducement to increase the quantity of mutton and wool has been greater than to improve the quality of the latter".¹⁰⁴ While short or clothing wool maintained a higher price than long wool, as it did in the late 18th century,¹⁰⁵ there was no incentive to change. As late as 1806, short wool was being sold at Yetholm for 41/- a stone, "higher than ever was known", compared with 26/- for long wool.¹⁰⁶ But by 1811, a change seems to have occurred, suggested in Figure 14:2, in which the price of long wool overtook that of short at a time when mutton prices were also

99 AC/Y/4/2/b/5.

100 E.Mackenzie, History of Northumberland, 1, 1825, p.221.

101 M^cCulloch suggested that sheep were more attractive to farmers than cattle both because more progress had been made in improving the breed and because their rearing and feeding rendered greater profit. J.R.M^cCulloch, op.cit., p.498.

102 J.R.M^cCulloch, op.cit., p.500.

103 George Culley to ?, Oct.26th 1789. NCRO/ZCU/31.

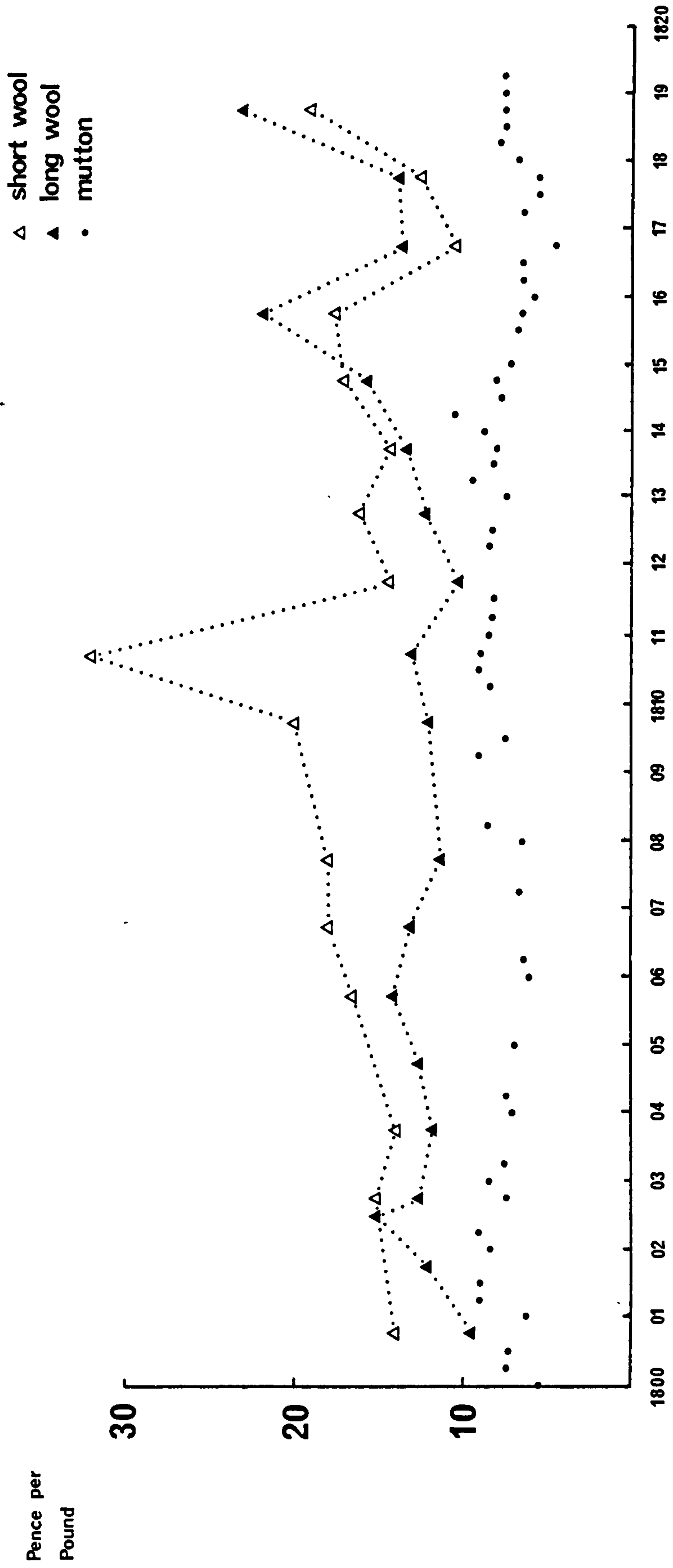
104 A.A., 27, 1797, p.190.

105 George Culley to Arthur Young, Dec.8th 1790. NCRO/ZCU/3.

106 George Culley to Edward Pease, July 5th 1806. NCRO/ZCU/32.

Figure 14:2

Quarterly Wool and Mutton Prices in Northumberland, 1800-1820



Source: Northumberland Quarterly Returns, Farmer's Magazine, 1800-1820.

high. Though wool exportation was permitted after 1825, short-wool growers had to face growing competition from foreign imports, a situation the scarcity of long wool prevented long-wool growers from experiencing. With the price of short wool declining, the Cheviot sheep farmers of Tindale and Coquetdale Wards petitioned Parliament for relief,¹⁰⁷ but even with the legal changes of 1825¹⁰⁸ demand was still largely for long wool, though now for export.¹⁰⁹

Figure 14:3 shows the efforts of George Hughes, father and son and tenants of Middleton Hall in Ilderton, to adapt sheep stock to changing market conditions between 1815 and 1871. It would appear from fleece weight figures that infusion of Leicester blood in Blackface stock from 1821 to 1834 had little effect in increasing fleece weight and was presumably designed merely to produce lambs, probably for fattening elsewhere. Change to a Cheviot-Leicester stock from 1834 accords with very high prices being paid for Cheviot wool at this time, but when these prices slumped in the 1850s, the Cheviots were replaced by pure-bred Leicesters with a consequent marked improvement in wool yield.

There being no woollen manufacturers in Northumberland, most wool was sent to the West Riding, though some found its way to Aberdeen and Peterhead in Scotland.¹¹⁰ Staplers from Leeds and Wakefield toured the County in July and August¹¹¹ and farmers dealt directly with these¹¹² or with commission agents in Yorkshire.¹¹³ Not until 1835 was a wool fair established in Northumberland, at Alnwick, to give both staplers and farmers more scope in their bargaining.¹¹⁴ Draft ewes and wethers of all breeds were sent from the north and west of the County to south-east

107 Petition c.1823. NCRO/ZAL/83/9. 108. J.R.M^cCulloch, op.cit., p.502.

109 N.C., May 29th 1824.

110 George Culley to Arthur Young, Dec.8th 1790. NCRO/ZCU/3.

111 A.A., 24, 1795, p.102.

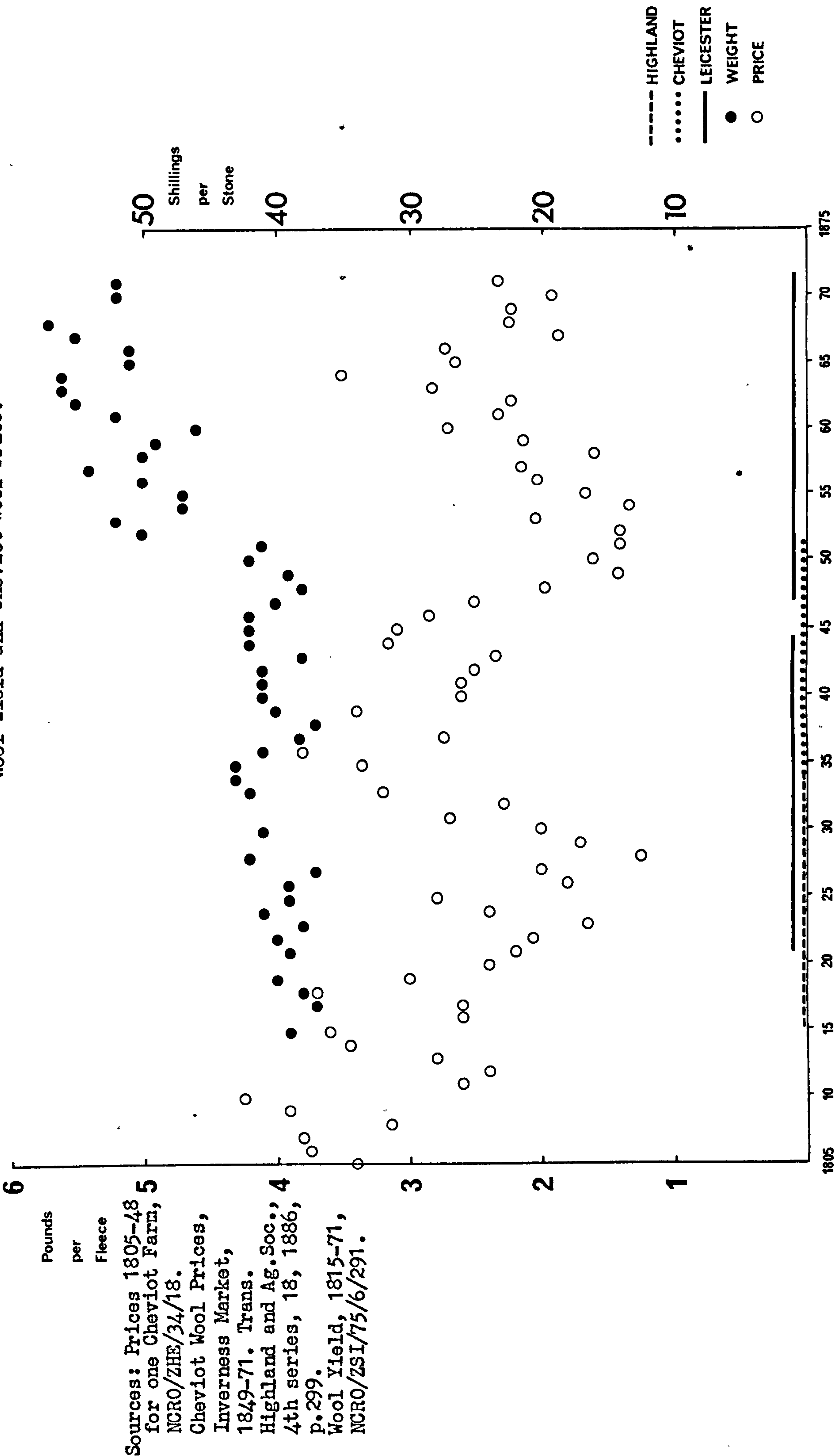
112 A.A., 19, 1793, p.149

113 N.C., July 17th 1813.

114 N.C., June 23rd 1848.

Figure 14:3

Wool Yield and Cheviot Wool Price.



Sources: Prices 1805-48 for one Cheviot Farm, 5 NCRO/ZHE/34/18. Cheviot Wool Prices, Inverness Market, 1849-71. Trans. Highland and Ag. Soc., 4th series, 18, 1886, p. 299. Wool Yield, 1815-71, NCRO/ZSI/75/6/291.

Northumberland or to Yorkshire for fattening in the case of wethers and to bear one last lamb before fattening and slaughter in the case of ewes. Figure 14:4 shows sheep numbers at a small fattening farm near Belsay in 1815 and 1846 and reveals a system of buying in mid-summer for sale in mid-winter after pasture and hay resources had been exhausted. The slightly longer keeping period in 1846 suggests a greater reliance on turnips that accords with evidence of increased drainage, use of manure and turnip acreage at this period. Farmers falling short of turnips in the north of the County sent their sheep on to where turnips were more plentiful.¹¹⁵ In Yorkshire they boasted "we grow turnips that yearly feed vast quantities of cattle and sheep of our own breed, as well as several thousands of sheep from Northumberland".¹¹⁶ Not only was the South able to feed; it was also able to consume. In 1793, it was thought that more sheep had gone from Northumberland into Yorkshire than ever before.¹¹⁷ There seems little doubt that this pattern of traffic continued in the 19th century and, to judge from sheep numbers, increased.

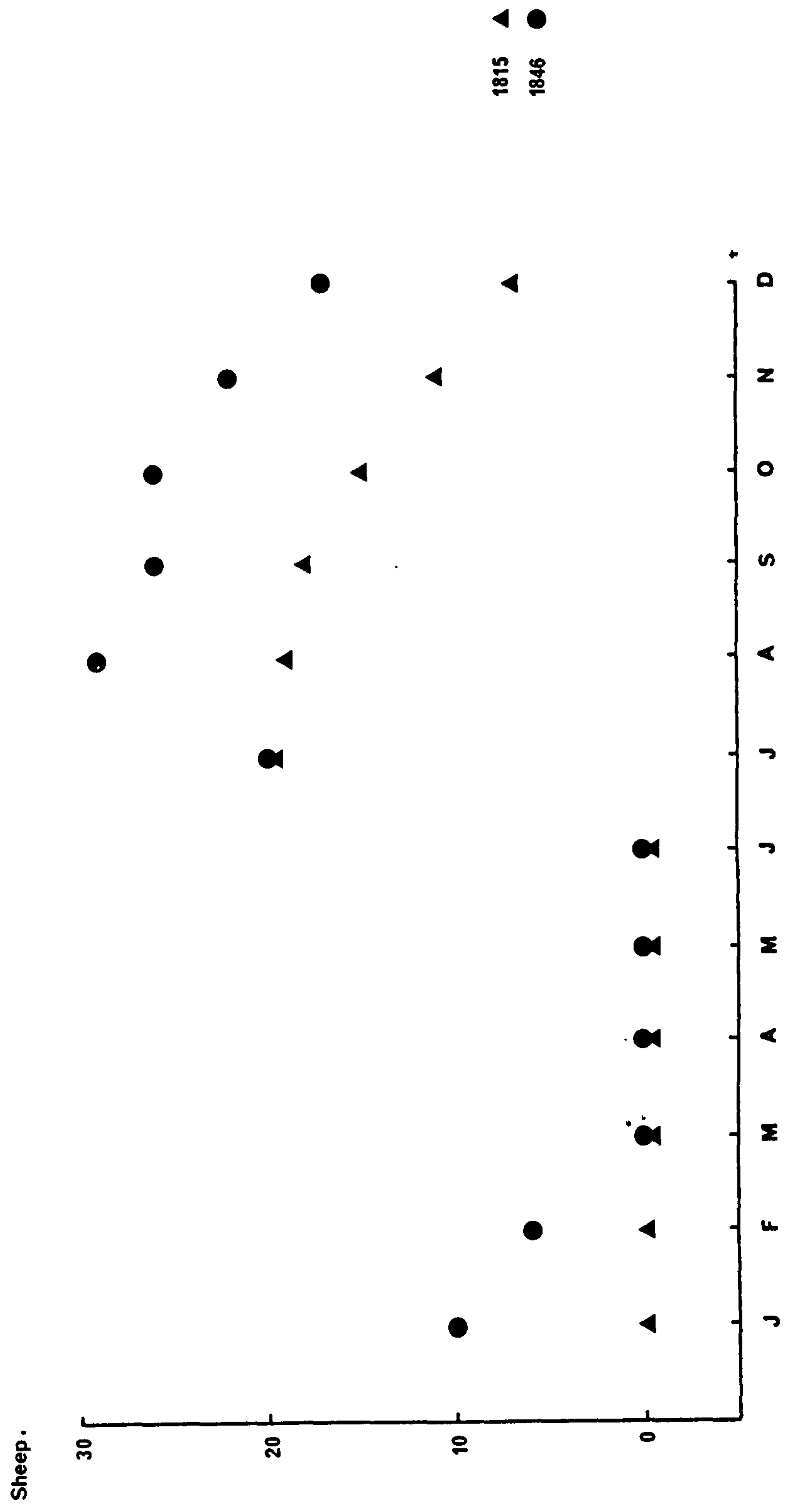
If the 18th century had seen the improvement of the lowland sheep in Northumberland, then the first half of the 19th witnessed similar improving standards among highland sheep. The process, however, was more complicated. Rapid production of meat satisfied lowland demands, but those of the highlands were determined by the price and market for wool as well as for suitable meat. The progress and consequence of Dishley blood in the lowlands is perhaps more obvious and has attracted more attention than the influence of diluted Dishley blood on the hills, but it would be a mistake to assume the latter was automatically of lesser significance. Only very recently it has been claimed that "Roughly one-third of Northumberland is low productivity land, most of it sheep farming which has changed little since the latter half of the 18th century when wolves had disappeared and sheep were kept in large numbers. Since then

115 George Culley to John Welch, Nov.11th 1801. NCRO/ZCU/6.

116 F.M., 4, 1803, p.151.

117 A.A., 19, 1793, p.150 and N.C., Oct.25th 1800 & March 5th 1803.

Figure 14:4
Sheep Numbers at Belsay.



Source: NCRO/ZMI/B35/15.

there has been an actual lack of improvement in this type of farming".¹¹⁸
 It would seem that this is the very reverse of the truth and that important changes in hill-land sheep farming, though of a less dramatic kind than those that had occurred on the lowlands, were equally significant and sufficient to adapt 18th century conditions to a 19th century market.

Pigs.

Very little interest was shown in pig husbandry in Northumberland between 1750 and 1850. Pigs were not even regarded as a marketable commodity until the early years of the 19th century,¹¹⁹ and Wark Farm with 60 or 80 pigs was described in 1864 as one of the very few "where pigs are met with as part of the regular feeding stock".¹²⁰ Culley thought the only breeds worth encouraging were the Berkshire and the Chinese,¹²¹ and had himself brought a Berkshire boar and sow all the way from Wentbridge to Fenton in 1784.¹²² It was this large, very fat Berkshire sort that Culley claimed was general in the County at the end of the 18th century, but being replaced by the smaller, black, quicker-fattening Chinese breed, themselves weakening to a better-behaved, small white kind.¹²³ Pigs are rarely specifically mentioned in stock advertisements, but some farmers seem to have kept a few. Pigs at Riddell, in Roxburgh, were described in 1804 as "Suffolk and Berkshire Swine",¹²⁴ and a massive pig of the "real Chinese prick-eared Breed" travelled the County the following year.¹²⁵ In 1803, a well-bred boar was available at Newton, near Felton, to serve sows at 10/6 each,¹²⁶ but there is no other evidence of efforts to improve pig breeds. At Seaton Delaval, young pigs were brought in from Glendale to scavenge what they could from the

118 'The Development of Farm Buildings in Northumberland', Northumberland County Planning Committee, 1965, p.2.

119. 'The Old Cattle Market at Morpeth', c.1880, NCRO/Morpeth Collectanea.

120 John Wilson, 'Northern Farms and Farming', 1864, pp.12-13. NCRO/ZSW/Add.& Misc.

121 George Culley, op.cit., 1807, pp.171-7.

122 George Culley to Matthew Culley, Oct.15th 1784. NCRO/ZCU/9.

123 Bailey and Culley, 1805, p.162. 124 N.C., June 23rd 1804.

125 N.C., Nov.16th 1805.

126 N.C., July 9th 1803.

rocks at low tide during the summer before being sold to "Country people for feeding in autumn".¹²⁷ Table 14:2, showing the numbers of pigs in July 1803 and July 1867 by wards, indicates that pig husbandry was of minor and declining importance, of most use in providing an efficient and economic means for disposing of cottage scraps.

Table 14:2

<u>Total Pig Numbers</u>			
<u>WARDS</u>	<u>1803</u>	<u>1867</u>	<u>CHANGE 1803 = 100</u>
Newcastle	1,162	292	25
Berwick	346	274	79
Bamburgh	2,290	2,292	100
Morpeth	3,028	2,730	90
Castle	5,327	2,498	47
Glendale	2,565	2,083	81
Coquetdale	4,105	3,048	74
Tindale	9,164	5,552	61
TOTAL	27,987	18,769	67

Sources: 1803 - E. Mackenzie, History of Northumberland, 1825, 1, p.221.

1867 - Agricultural Census. PRO/MAF/68/139.

Goats

Goats were of no general agricultural significance in the County except on some parts of the Cheviots where they were useful in reducing herbage noxious to sheep,¹²⁸ and in the areas of Wooler and Rothbury where holiday cottages were rented to whole families in the second half of the 18th century to allow them the benefits of fresh air and goats' milk.¹²⁹ At least one publican also kept a farm near Wooler exclusively for the rearing of goats to provide whey for his invalid clientele,¹³⁰

127 John Bryers to Sir John Delaval, June 5th 1783. NCRO/2DE/4/20/49.

128 Bailey and Culley, 1805, p.62.

129 George Taylor and James Raine, Memoir of Robert Surtees, Surtees Society, 1852, p.203; N.C., June 11th 1768, June 25th 1774, March 29th 1783, May 31st 1788, May 3rd 1794.

130 N.C., May 3rd 1788.

and Culley claimed there were more goats bred and kept in the neighbourhood of Wooler than in any other part of England.¹³¹ Whatever minor importance goats had seems to have disappeared in the 19th century as seaside holidays and more scientific remedies increased in popularity.

Poultry.

Little interest was shown in the keeping of hens. It was supposed that chickens did not repay the grain they consumed and they were "considered as articles purposely bred to pamper the rich",¹³² forming no part of the ordinary person's diet. Neither, however, did eggs, which were exceptionally cheap in Northumberland,¹³³ presumably as a result of the availability of and a preference for other foods. Instead, eggs were commonly used as a constituent of a gruel fed to young calves as a substitute for milk.¹³⁴

Cattle.

Not a great deal is known about Northumberland cattle of the early or mid-18th century. It has been assumed, perhaps correctly, that cattle, as a relatively valuable and portable form of property, would have been particularly sensitive to the more secure conditions brought about by the Union of 1707 and Culloden in 1746,¹³⁵ and that Northumberland, in its proximity to Durham and North Yorkshire, was in a convenient position to improve its herds by emulating leading Shorthorn breeders.¹³⁶ In 1794, Culley remarked that the Shorthorn "reached" from the southern extremity of Lincolnshire to the borders of Scotland,¹³⁷ and this has sometimes been taken to mean that the improved Shorthorn was general throughout the area by the late 18th century.¹³⁸

131 George Culley to ?, 1785. NCRO/ZCU/5.

132 Bailey and Culley, 1805, p.163.

133 William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 1808-18, 1, p.95.

134 Bailey and Culley, 1805, p.143.

135 James Sinclair, History of Shorthorn Cattle, 1907, p.12.

136 James Sinclair, op.cit., p.256. 137 George Culley, op.cit., 1794, p.42.

138 James Wilson, The Evolution of British Cattle, 1909, p.102.

The peculiar advantages of the Shorthorn were that it could be used to produce both dairy and beef animals, it was adaptable and could thrive under varying conditions, and was fit for slaughter, though not of course fat, from $2\frac{1}{2}$ years.¹³⁹ But though it is now an established breed, it has been doubted whether the Shorthorn of the late 18th and early 19th centuries was any more than a type of cattle,¹⁴⁰ despite the apparent orthodoxy and regimentation imposed by Coates' Herd Book.¹⁴¹ Culley classified all the breed collectively as the 'Short-horned or Dutch Kind',¹⁴² though he did remark that lack of care in some Lincolnshire breeders had produced an undesirable black-fleshed sort.¹⁴³ In that Culley would go no further than to suggest different breeds of cattle were appropriate to different agricultural conditions and for various purposes,¹⁴⁴ he showed a totally different attitude from that he displayed towards sheep. While Culley went out of his way on every possible occasion to expound the merits of Dishley sheep, he did nothing of the kind for Shorthorn cattle. The scant attention he gave to cattle of any sort in the Northumberland Agricultural Report is remarkable and attracted the puzzled censure of William Marshall.¹⁴⁵ Though Culley himself owned large numbers of cattle - over 500 in 1795¹⁴⁶ - he was hardly known as Bakewell was, as a cattle breeder, nor do his papers reveal much more than a passing interest in the subject. What they do reveal is a consummate fascination in beef as a profitable marketable commodity. The suggestion is that the majority of Northumberland agriculturists were much more concerned about the profitability of their cattle than about the purity of their breeding.

An earlier interest than beef, however, had been in cattle as

139 K.J.J.Mackenzie, *Cattle and the Future of Beef-production in England*, 1919, pp.128-31.

140 R. Trow-Smith, *A History of British Livestock Husbandry*, 1959, p.90.

141 R. Trow-Smith, *op.cit.*, p.236; N.C., April 15th 1820.

142 George Culley, *op.cit.*, 1794, p.40.

143 *Ibid.*, 1794, pp.44-5.

144 *Ibid.*, 1786, pp.82-3.

145 William Marshall, *op.cit.*, p.91.

146 Accounts for Nov. 1798. NCRO/ZCU/33.

draught animals as well as producers of milk and food. Stock advertisements of the mid-18th century referred to oxen that could be worked or grazed,¹⁴⁷ and a soldier travelling between Alnwick and Belford in 1747 remarked that "hereabouts we frequently saw Country-men ploughing with four Couple of Oxen, and one of Horses, the Ground being so hard and strong, does here commonly require ten and twelve Cattle".¹⁴⁸ Oxen were certainly being employed on the Delaval estates in Glendale in 1763¹⁴⁹ and in 1783.¹⁵⁰ The change to horses came with the acceptance of a lighter plough, the Scotch swing plough, during the second half of the 18th century. Ox-ploughing had been universal in the 1740s, but had been almost entirely given up by the end of the century.¹⁵¹ Donaldson quoted Northumberland in 1795 as an area where "the best mode of applying the draught,... by two horses abreast" was employed,¹⁵² but Culley, apparently in isolation, was using more than 150 oxen in the draught in 1801,¹⁵³ stimulated by a rise in the cost of horses.¹⁵⁴ Culley spoke of Northumberland as being one of the few places he knew where oxen were kept to any age,¹⁵⁵ yet despite Culley's feeling that oxen would become more popular,¹⁵⁶ he was forced to admit the horse was often the more economic worker.¹⁵⁷ The supporters of horses and those of oxen raged with new energy lent by wartime crises,¹⁵⁸ but although the Longbenton reporter to the Home Office in 1795 condemned "the use of Horses for the Plough",¹⁵⁹ oxen for draught were of declining importance in 18th century Northumberland agriculture and of no significance in the 19th. It is presumed that high prices for

147 N.C., April 8th 1758.

148 A Volunteer, Journey Through Part of England and Scotland Along with the Army, 1747, p.48.

149 Robert Burne to Sir John Delaval, July 4th 1763. NCRO/2DE/4/52/11.

150 Joseph Oxley to Sir John Delaval, Feb.9th 1783. NCRO/2DE/4/15/10.

151 F.M., 5, 1804, p.296.

152 James Donaldson, Modern Agriculture, 1795, 2, p.70.

153 George Culley, op.cit., 1801, p.85.

154 Bailey and Culley, 1794, p.29. 155 George Culley, op.cit., 1801, p.85.

156 Ibid.

157 Bailey and Culley, 1805, pp.155-61.

158 e.g. F.M., 1, 1800, p.433.

159 PRO/HO/42/55/342.

both corn and meat at the turn of the century proved the death knell of oxen for the plough. Good land could by then be much more profitably employed than by feeding oxen to six or eight years of age.

Some of the newspaper advertisements of the 1750s and 1760s offered bulls for sale but made no mention of the breed. Desirable points seem to have been red and white colouring¹⁶⁰ and sheer size.¹⁶¹ A change seems to have occurred in the 1770s when similar advertisements offered bulls of the Lancashire or Longhorn breed,¹⁶² or even Longhorn stock for grazing.¹⁶³ From this time on, interest was shown in bulls described as "a mixture of the long horned kind"¹⁶⁴ or "got by a short horned Bull, out from a half-bred Lancashire Cow".¹⁶⁵ Arthur Young reported Northumberland cattle to be generally of the Shorthorn kind in 1769, but he found Longhorns at Belford, Cambo and Glenwhelt.¹⁶⁶ In 1800, two bulls were offered, one a Longhorn, the other a Shorthorn and it was declared "Which of them is the superior Animal is a Matter not yet decided by public Opinion; in this Point they remain in full Rivalry with each other".¹⁶⁷ But it would seem that the Longhorns did not offer serious competition in Northumberland. A Northumberland letter dated January 31st 1793 stated "With respect to Mr. Bakewell's long horned cattle; the kind was tried here by a friend of that gentleman's, and given up for the short horns; I have heard that the reasons were, that they were very bad milkers, and did not get fat at an early age".¹⁶⁸ George Culley positively affirmed that though the Longhorns had been tried, they had all been given up in favour of the Shorthorns by 1804,¹⁶⁹ and elsewhere remarked on the

160 N.C., Feb.23rd 1765 & Feb.25th 1769.

161 N.C., April 3rd 1762.

162 N.C., Dec.4th 1773; June 28th 1777; March 24th 1781.

163 N.C., April 18th 1778.

164 N.C., May 21st 1774.

165 N.C., July 21st 1792.

166 Arthur Young, Northern Tour, 1770, 3, pp.41, 96 & 103.

167 N.C., May 10th 1800.

168 A.A., 19, 1793, p.539.

169 Bailey and Culley, 1805, p.140.

declining interest in Longhorns between 1786 and 1807.¹⁷⁰

Considering the apparent success of the doctrine of early maturity, of producing the most meat in the shortest possible time at the least expense, in Northumberland sheep breeding during the late 18th century, it is surprising that a similar philosophy was not followed in the breeding of improved cattle. Culley wrote that it had been "the misfortune of the short-horn breeders to pursue the largest and biggest-boned ones as the best, without considering that those are the best that pay the most money for a given quantity of food",¹⁷¹ but at the same time quoted detailed examples of the enormous weight attained by some.¹⁷² Twenty-five local newspaper advertisements appear between 1756 and 1807 which proclaim the grotesque dimensions of generally ancient and totally uneconomic Shorthorn stock. The Durham Ox, weighing 165 stone 12 pounds the four quarters when slaughtered at 11 years old,¹⁷³ was the champion, but many others approached this figure.¹⁷⁴ One ox killed in 1786 was 6 feet 5 inches high and 11 feet 5 inches long,¹⁷⁵ another in 1802 19 hands high and 12 feet long.¹⁷⁶ Although some of these monsters, such as the Spottiswoode Ox,¹⁷⁷ the Whitley Ox¹⁷⁸ or the Northumberland Ox¹⁷⁹ were no more than force-fed travelling curiosities, the majority were presented as evidence of outstanding breeding techniques by the County's leading Shorthorn breeders. After 1807, there is no more mention of cattle of such elephantine proportions and a local contribution to the Farmers Magazine of that year stated that "all the best graziers and breeders in the two quoted counties [East Lothian and Northumberland], are striving who can first bring their stock to market; and the universal toast is early

170 George Culley, op.cit., 1807, p.82.

171 Ibid., p.81.

172 Ibid., pp.48-51.

173 N.C., May 2nd 1807.

174 The average weight for the four quarters of the 14 other oxen for which figures were given was 138 stones 3 pounds. Their average age exceeded 6 years.

175 N.C., Feb.4th 1786.

176 N.C., Oct.2nd 1802.

177 N.C., April 17th 1802.

178 N.C., March 28th 1789.

179 N.C., May 9th 1807.

maturity".¹⁸⁰

It is curious that the same sort of pointless exercise seems to have been translated to a breed of cattle totally unequal to the competition - Kyloe or West Highland cattle. Four Kyloe oxen mentioned between 1779 and 1807 averaged 78 stones the four quarters and generally seem to have been much younger when slaughtered. Pride seems to have been in how small these animals were and it was boasted that one was so "remarkably low sized, and so small boned that any grown person might have spanned his legs below the knee",¹⁸¹ of another that he was "only four Feet and half an inch high at the Crop"¹⁸² and of a third that "the measurement of his shank bone amounted to no more than four inches in circumference".¹⁸³ Although the weight of these cattle could not compare with that of the Shorthorn, other qualities were claimed such as "the shortness of the time of his feeding"¹⁸⁴ and the standard of beef.¹⁸⁵ "The superior Quality of this Beef is so generally esteemed in the West of England, Manchester, etc. that it is sold 2d per Pound above any other."¹⁸⁶ An increasing number of stock advertisements of the early 19th century indicate that a Kyloe-Shorthorn cross was becoming popular and even Thomas Bates of Halton Castle, probably the leading Northumberland Shorthorn breeder of the day,¹⁸⁷ offered for sale cattle stock consisting of "30 West Highland Cows and Heifers; 10 Cows and Heifers of the improved short-horned Breed, bought and bred from Messrs Colling's Stock; and 20 of the mixed Blood between those two Breeds".¹⁸⁸ An advertisement of the following year carried the rider that an ox of Bates showed "what may be produced by a judicious crossing of those breeds of cattle which possess the valuable properties of thriving quickly, whose beef is of the best quality, and

180 F.M., 8, 1807, p.9.

182 N.C., Jan.11th 1806.

184 N.C., June 26th 1779.

186 N.C., May 26th 1804.

188 N.C., Aug.22nd 1807.

181 N.C., May 25th 1782.

183 N.C., July 31st 1790.

185 N.C., April 30th 1803.

187 Thomas Bell, op.cit., passim.

which consume the smallest quantity of food",¹⁸⁹ and another animal of mixed breeding exemplified "the progress of an improvement in the cattle stock of the country, which, while it returns a greater profit for food consumed, to the breeder, furnishes also both beef and butter of a superior quality, to the consumer".¹⁹⁰ Consequently, the academic argument whether the best and original Shorthorns contained Kyloe or Galloway blood is a matter of little importance in Northumberland.¹⁹¹ The pure Shorthorn had been rejected by both breeders and feeders in favour of a more practical cross-breed.

Map 14:4 shows the distribution of leading Northumberland Shorthorn breeders of the first half of the 19th century. It marks all the traceable locations of breeders and feeders of Shorthorns mentioned in Coates' Herd Book of 1822, subscribers to that book, those proclaimed as leading Northumberland breeders of the period in Sinclair's History of Shorthorn Cattle¹⁹² and both breeders and feeders of Shorthorn stock exhibited at the Royal Agricultural Society's Newcastle Show in 1846.¹⁹³ Considering the early introduction of the Shorthorn to Northumberland, it is peculiar that Shorthorn specialists were, even by mid-century, confined basically to the Tyne Valley, with a few in Glendale and the Bamburgh-Alnwick area.

Other factors were working in favour of crosses with Shorthorns rather than pure Shorthorn stock. Kyloes were readily obtainable from Scotland and were frequently purchased at the Falkirk Tryst to straw-feed in the autumn and winter for sale the following summer.¹⁹⁴ In the south of the County, a great deal of stock was the progeny of the dairy cows of Newcastle and Shields, and in the north of the cows kept by hinds. "These animals vary in every conceivable degree of cross, from the black

189 N.C., Feb. 6th 1808.

190 N.C., Dec.15th 1810.

191 Mr. Chrisp to Newcastle Farmers' Club, May 5th 1860. L. & P. Bolbec, N630.6/3.

192 James Sinclair, op.cit.

193 Show Catalogue. L. & P., Bolbec, N630/8.

194 Bailey and Culley, 1805, p.119.

▲ Breeders in Coates' Herdbook
1822.

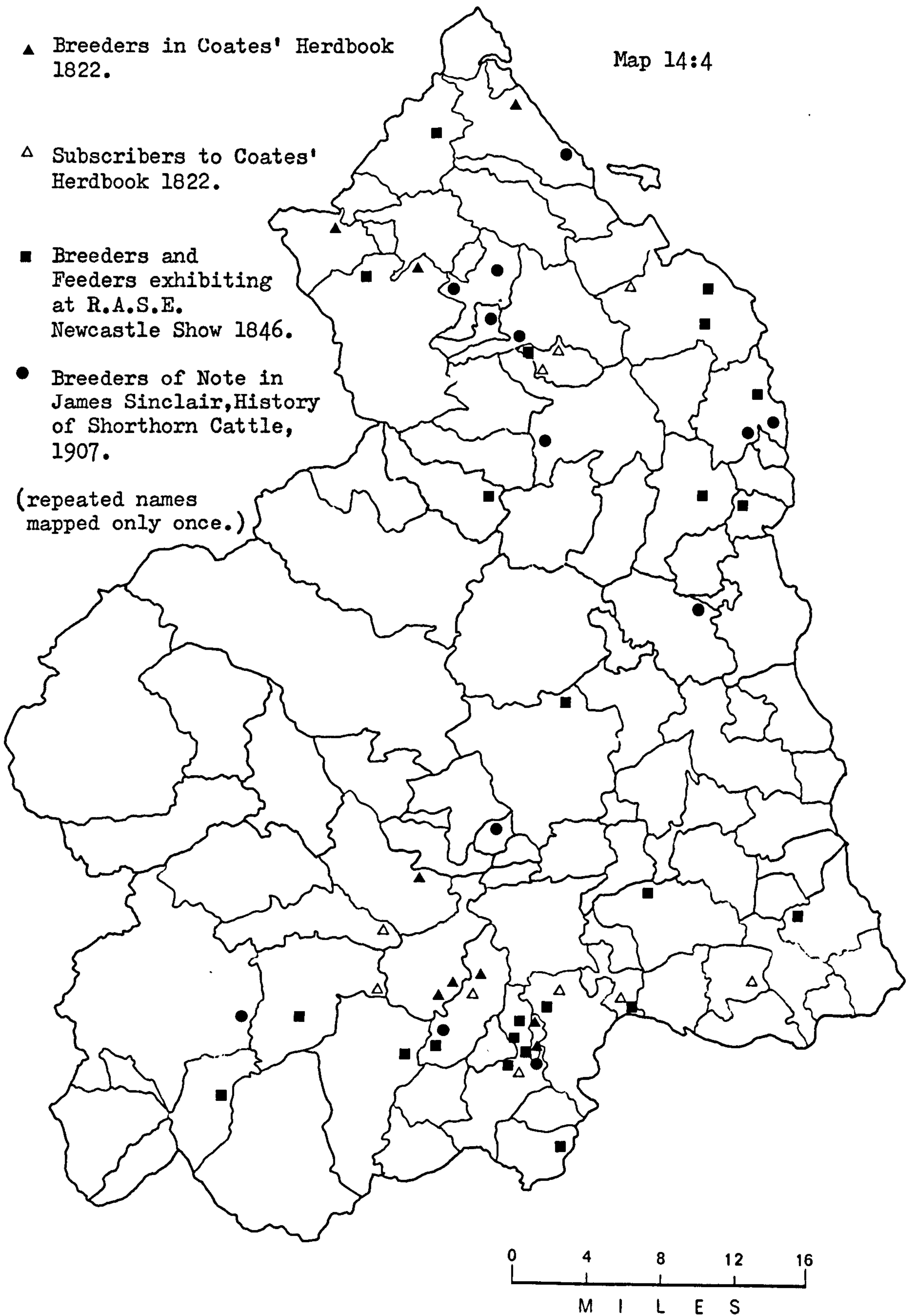
Map 14:4

△ Subscribers to Coates' Herdbook 1822.

■ Breeders and Feeders exhibiting at R.A.S.E. Newcastle Show 1846.

● Breeders of Note in James Sinclair, History of Shorthorn Cattle, 1907.

(repeated names mapped only once.)



Distribution of Champion Shorthorns.

West Highland kyloe, the polled Galloway and Ayrshire cow, to the noble and massive shorthorn. The most part have several crosses of good shorthorn blood, and their produce is invariably got by a shorthorn bull, and will feed to sixty or seventy - sometimes eighty - ~~stones~~^hes... The calves are all purchased by the farmers; so that a farmer having twelve men has the command of twelve calves, to add to the number produced by his own cows."¹⁹⁵ Consequently, Northumberland farmers were generally saved the expense of a large breeding herd, but at the price of breed purity.

An extremely warm debate concerning the purity of local Shorthorns enlivened the pages of the Newcastle Courant in 1811. 'A Farmer' protested that these Shorthorns were of such a mixed breed that their characteristics as a breed were difficult to determine,¹⁹⁶ and was answered by 'A Young Farmer' that their propensity to impose their own characteristics on other breeds made them easily distinguished,¹⁹⁷ a point that has been emphasised by more modern writers.¹⁹⁸ This propensity seems to have satisfied Northumberland desire for Shorthorn blood. Culley claimed that 50 guineas had once been paid for the hire of a Shorthorn bull for a season, but that the normal price was a guinea.¹⁹⁹ Certainly two champion Shorthorns with massive and impeccable pedigrees could command only 20 guineas a season in 1796,²⁰⁰ and a bull from one of the County's most famous Shorthorn breeders cost but a guinea per cow in 1793.²⁰¹ If these were top rates, they are unimpressive beside the prices asked for Dishley sheep and presumably reflect a comparative lack of interest in first rate animals.

Despite the milk-producing properties of some Shorthorns, it would seem that it was not they who supplied milk in the dairies of Newcastle. Milch cows were regularly imported from Harlingen, in Holland, in the early

195 N.C., April 2nd 1847. See also Bailey and Culley, 1805, p.143.

196 N.C., Feb.2nd 1811.

197 N.C., Feb.23rd 1811.

198 K.J.J. Mackenzie, op.cit., pp.129-30.

199 Bailey and Culley, 1805, p.143.

200 N.C., April 23rd 1796.

201 N.C., March 30th 1793.

19th century,²⁰² and Alderney cows even more regularly from about 1770.²⁰³ Shipments also came from Jersey²⁰⁴ and it was possible to place orders for cows from Guernsey in the 1820s.²⁰⁵ There is ample evidence from stock advertisements of the Alderney breed being used throughout Northumberland from the 1770s,²⁰⁶ and it may be that these were the sort of cattle for sale at Eshet in 1760 described as "11 Milch Cows of an extraordinary Breed".²⁰⁷ These too seem to have been readily crossed with other breeds. A stock advertisement for the Pallinsburn farm, near Wooler, in 1777 offered "about twenty Kyloe Cows; some of the Kyloes with Alderney Calves, and other Calves at their feet".²⁰⁸ At least two shipments of Shetland cattle arrived at Newcastle in the 1820s,²⁰⁹ but it is not known what particular attraction they held.

Table 14:3 compares figures for the total numbers of cows and other cattle in the old County of Northumberland by wards for July 1803 and July 1867. The most interesting feature is the rise in total cattle numbers in Column A despite the substantial decline in cow numbers shown in Column B. It can only be assumed that local stock was no longer producing the bulk of beef cattle by the mid-19th century. This is confirmed by other evidence. The upper Wansbeck had been used for breeding and feeding inferior Shorthorns in the 1840s, but had switched to fattening Kyloes in the 1850s and then to fattening Irish cattle in the 1860s.²¹⁰ Annual imports to Britain of Irish cattle for fattening had risen from 58,000 in 1826 to 98,000 in 1835 and it was thought they would reach 209,000 in 1860,²¹¹ though Irish cattle were certainly being bought for fattening in 1818,²¹² and to supply 'sloop beef' at Seaton

202 N.C., Nov.27th 1802; Jan.8th 1803; Sept.24th 1814.

203 e.g. N.C., Oct.4th 1777 and May 19th 1821.

204 N.C., July 13th 1771. 205 N.C., June 9th 1827.

206 N.C., Jan.20th & Nov.24th 1770; May 16th 1772; March 23rd, Oct.2nd & Nov.6th 1779; Feb.26th 1780.

207 N.C., July 19th 1760. 208 N.C., May 10th 1777.

209 N.C., Oct.13th 1821 and June 27th 1829.

210 John Wilson, op.cit., p.7. NCRO/ZSW/Add.& Misc.

211 Mr. Hedley to Newcastle Farmers' Club, Aug.11th 1860. NCRO/ZHE/34/b.

212 William Todd to George Silvertop, July 13th 1818. NCRO/ZCO/9/1.

Sluice in 1783.²¹³ It is particularly interesting that second rate cattle should have been used for this purpose as Culley claimed that the thicker Shorthorn beef was more appropriate and was always used on the Newcastle coal ships.²¹⁴

Table 14:3

<u>WARDS</u>	<u>Total Cattle Numbers</u>					
	<u>A</u>			<u>B</u>		
	Oxen, Young Cattle & Calves			Cows		
	<u>1803</u>	<u>1867</u>	<u>Change 1803=100</u>	<u>1803</u>	<u>1867</u>	<u>Change 1803=100</u>
Newcastle	-	188	-	497	1,021	205
Berwick	194	300	155	184	112	61
Bamburgh	4,019	3,842	96	1,515	1,021	67
Morpeth	5,707	7,991	140	3,199	1,790	56
Castle	4,716	4,606	98	4,373	2,004	46
Glendale	4,200	3,872	92	1,781	1,056	59
Coquetdale	7,659	7,354	96	3,991	2,453	61
Tindale	19,508	24,926	128	14,297	8,080	57
TOTAL	46,003	53,079	115	29,837	17,528	59

Sources: 1803 - E. Mackenzie, History of Northumberland, 1825, 1, p.221.
1867 - Agricultural Census. PRO/MAF/68/139.

It is thought that dealings in cattle became substantially more profitable for the farmer about the beginning of the 19th century. Cattle prices had certainly soared, from an estimated £6 per head in 1794 to £10 in 1808,²¹⁵ and beef from 3 $\frac{3}{4}$ d per pound in 1788 to 5 $\frac{1}{4}$ d in 1798.²¹⁶ Farmers feared that peace might bring reduced prices,²¹⁷ but Figure 14:5 suggests there was no sudden drop. Instead, it emphasises high prices throughout the period from 1795 to 1830 with very high prices indeed between 1800 and 1825. Yet, beside enormous grain prices, beef was still

213 John Bryers to Sir John Delaval, Aug.15th 1783. NCRO/2DE/4/20/57.

214 George Culley, op.cit., 1794, p.47.

215 Robert Kerr, Agriculture of Berwickshire, 1813, p.73.

216 John Fuller, History of Berwick, 1799, p.429.

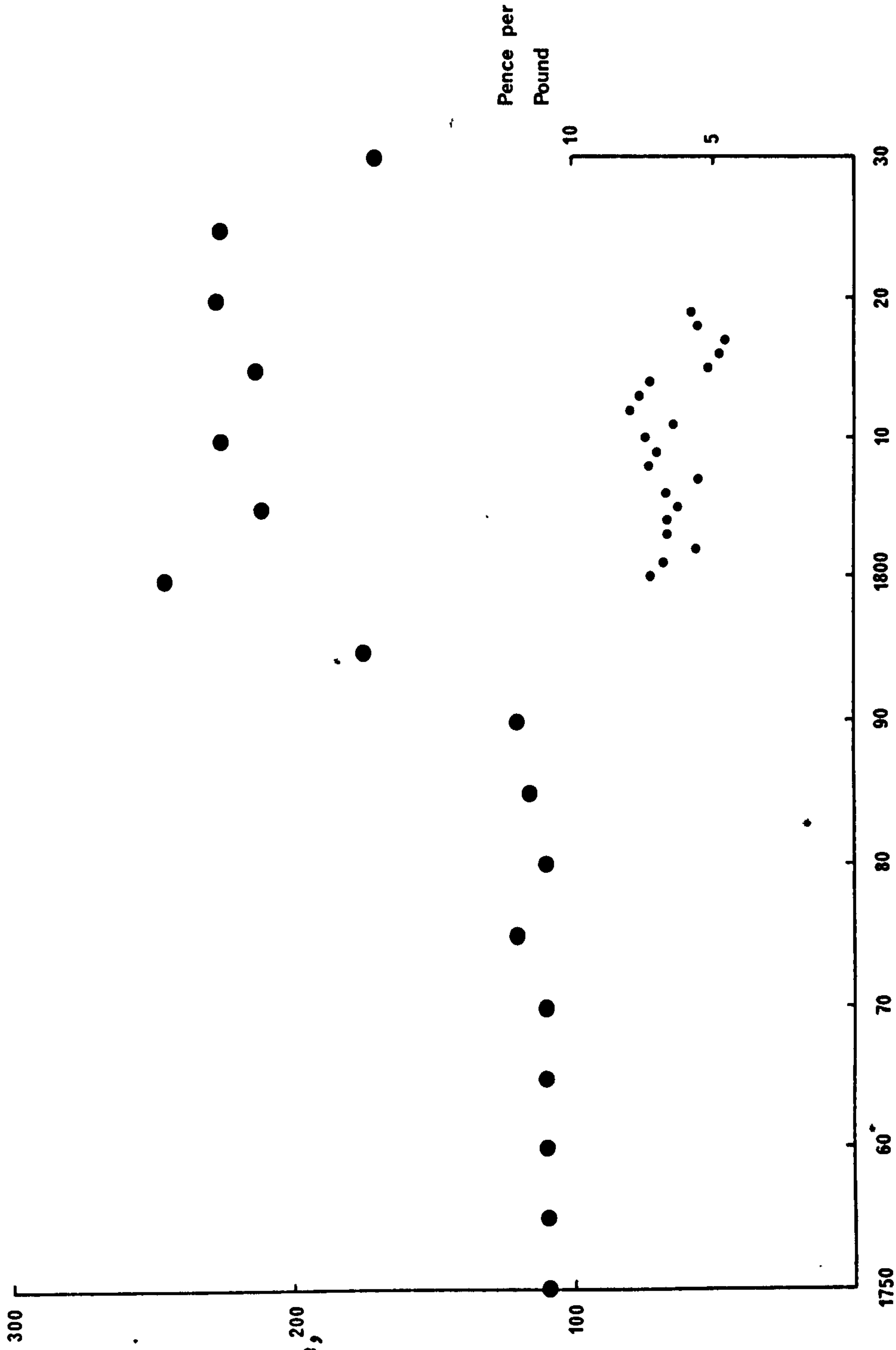
217 J. Henderson to Jasper Gibson, April 16th 1802. NCRO/CO/43.

Figure 14:5

Beef Prices 1) Price Relatives for England and Wales, 1750-1830.
2) Northumberland Prices, 1800-1819.

100 = Average Beef

Price 1720 - 44



Sources:

- 1) W.H. Beveridge, Prices and Wages in England, 1939, 1.
- 2) Northumberland Quarterly Reports, Farmer's Magazine, 1800-1819.

attractive to the consumer and even broke into new markets. In 1799 it was said that "At Edinburgh Dunse etc. the Labouring people bought up great numbers of the midling small Cattle to kill for Marts, finding them cheaper than oat meal, or any meal God knows",²¹⁸ and in north Northumberland it was reported that a new demand for beef, besides the normal one from the South, was being felt from Glasgow.²¹⁹

In 1802, Culley reported that the Glendale farmers had sold cattle at Dunse in Berwickshire. "You see how the tables are turned. Instead of sending South, we now send them North for better markets!"²²⁰ But this was more the result of the alertness of Northumberland farmers quite willing and able to play one market or butcher against the other until they met with suitable terms, than of a permanent change in the direction of trade. Northumberland cattle had always gone to feed the people and ships of the Tyne and the industrial towns of south Yorkshire.²²¹ Larger farmers often dealt directly with butchers or jobbers on their farms,²²² but all had some dealings with Morpeth market, probably the third biggest stock market in England, after Smithfield and Wakefield, until the 1840s.²²³

By 1805 Culley could estimate the average profit from grazing cattle from May Day to Michaelmas to be as much as £3 or £3.10s. per head,²²⁴ but 29 cattle kept at Dissington from August until December 1782 had yielded only 9/1 per head profit.²²⁵ The moderate increase in the numbers of feeding cattle during the first half of the 19th century and the continuing high price of beef suggest that cattle remained a profitable field. Methods of fattening them, however, altered. Stall feeding of cattle was practised on some of the best Northumberland farms in the 19th century, but was

218 George Culley to John Welch, Nov.23rd 1799. NCRO/ZCU/6.

219 F.M., 9, 1810, p.273.

220 George Culley to John Welch, Nov.22nd 1802. NCRO/ZCU/6.

221 Richard Warner, A Tour Through the Northern Counties of England, 1802, 2, p.7.

222 George Culley to John Welch, 1798. NCRO/ZCU/6. William Todd to George Silvertop, Dec.12th 1812. NCRO/ZCO/9/1.

223 'The Old Cattle Market at Morpeth', c.1880. NCRO/Morpeth Collectanea.

224 Bailey and Culley, 1805, p.119.

225 John Bryers to Sir John Delaval, Jan.3rd 1783. NCRO/2DE/4/20/31.

sometimes unnecessarily expensive.²²⁶ An offer by the Duke of Northumberland in 1850 to pay for the erection of stalls for box-feeding in return for a percentage from his tenants did not meet with the excitement he may have expected.²²⁷ Much more popular was a practice which seems to have been introduced very early in the century, of wintering cattle in small, open folds. Culley wrote to Welch in 1803 "But Jn^o why tye all your Cattle up to make manure? Why not keep light Queys, in an open fold, & give them Turnips in Troughs, raised upon feet, or Cribs in the Corner of the fold? It is the way Mr. Nisbet & all our first rate winter graziers do now. You know, that they turn much fatter out in the Spring to grass, from an open fold, than from being tyed up? And get fat in $\frac{1}{2}$ the time".²²⁸ By 1833 it was estimated that 90% of Northumberland cattle were wintered in these small folds.²²⁹

Early mention of oil cake being used to feed cattle is in a unique letter from the Duke of Northumberland to the Annals in 1784, proclaiming its worth as a feed for calves when mixed with skimmed milk.²³⁰ The large ratio of calves to cows on Northumberland feeding farms meant a shortage of cow's milk and many patent recipes were suggested as suitable substitutes.²³¹ The first newspaper advertisement for linseed oil cakes to feed cattle appeared in 1780²³² and other early advertisements for linseed oil cake indicate that it was originally shipped from southern England,²³³ probably from London or Hull,²³⁴ and at least some was made from American linseed.²³⁵ Although a local mill was established for its manufacture in Newcastle by 1790,²³⁶ it was still being imported from Holland in 1818.²³⁷ William Greene of Newcastle seems to have been the main purveyor of oil cake and it may be doubted from the tone of his

226 The Times, Nov.28th 1851.

227 Christopher Bell to Hugh Taylor, Dec.5th 1850 and Charles Burnett to Hugh Tylor, Dec.13th 1850. NCRO/ZHE/34/6.

228 George Culley to John Welch, July 8th 1803. NCRO/ZCU/6.

229 J.C.Loudon, Encyclopaedia of Architecture, 1833, p.495. See also John Grey, p.177.

230 A.A., 1, 1784, pp.293-4.

231. e.g. N.C., April 2nd 1847.

232 N.C., Jan.22nd 1780.

233 N.C., Dec.20th 1788.

234 N.C., Sept.19th 1795.

235 N.C., Nov.28th 1789.

236 N.C., April 17th 1790.

237. N.C., Nov.7th 1818.

advertisements whether Northumberland farmers were as eager as some southern counterparts to accept the innovation. One of 1790 read "The preference this article has in the Southern parts of the kingdom to every other feeding for Cattle is well known, and also that such Cattle are always preferred, and bring a better price in Smithfield Market... In Lincolnshire, Yorkshire, and Norfolk, they are universally used, and bring a better price by 20 per cent. which at once shews the advantage to the Graziers in this neighbourhood; and the Oil Manufacturers flatter themselves, that the prejudices of this country will soon be removed, as trial and experience can only be wanting".²³⁸ No doubt both linseed and rape seed oil cake were used as cattle feed by some of the best farmers for better cattle,²³⁹ especially when turnips were in short supply,²⁴⁰ but the pedigree of Northumberland cattle did not generally warrant such high feeding and turnips were not normally scarce.²⁴¹ Consequently, oil cake, even in the mid-19th century, was commonly regarded as unnecessary and uneconomic. In 1847 it was asserted that "in this neighbourhood few farmers give cake except to young stock, fattening off their three year olds with white turnips up to Christmas, and Swedes after that, and a daily supply of oat straw. This may appear a startling assertion to many south country farmers, yet it is strictly true".²⁴²

Stock sales advertisements are not usually sufficiently detailed to give the breed of cattle until the 19th century. Even then, breeds such as the Longhorn or the Devonshire occur in only a handful of cases and it hardly seems to have been worthwhile describing Kyloe stock. Shorthorn blood, however, where it existed in any concentration, was something of which to be proud and was generally differentiated from other stock.

238 N.C., April 17th 1790. See also N.C., May 17th 1800.

239 George Culley recommended Welch use oil cake in 1802 as Colling had used it to feed his cattle. George Culley to John Welch, June 18th 1802. NCRO/ZCU/6.

240 N.C., April 6th 1799.

241 In 1800, Culley had thought that oil cake would not pay even in times of necessity. George Culley to John Welch, Feb. 11th 1800. NCRO/ZCU/6.

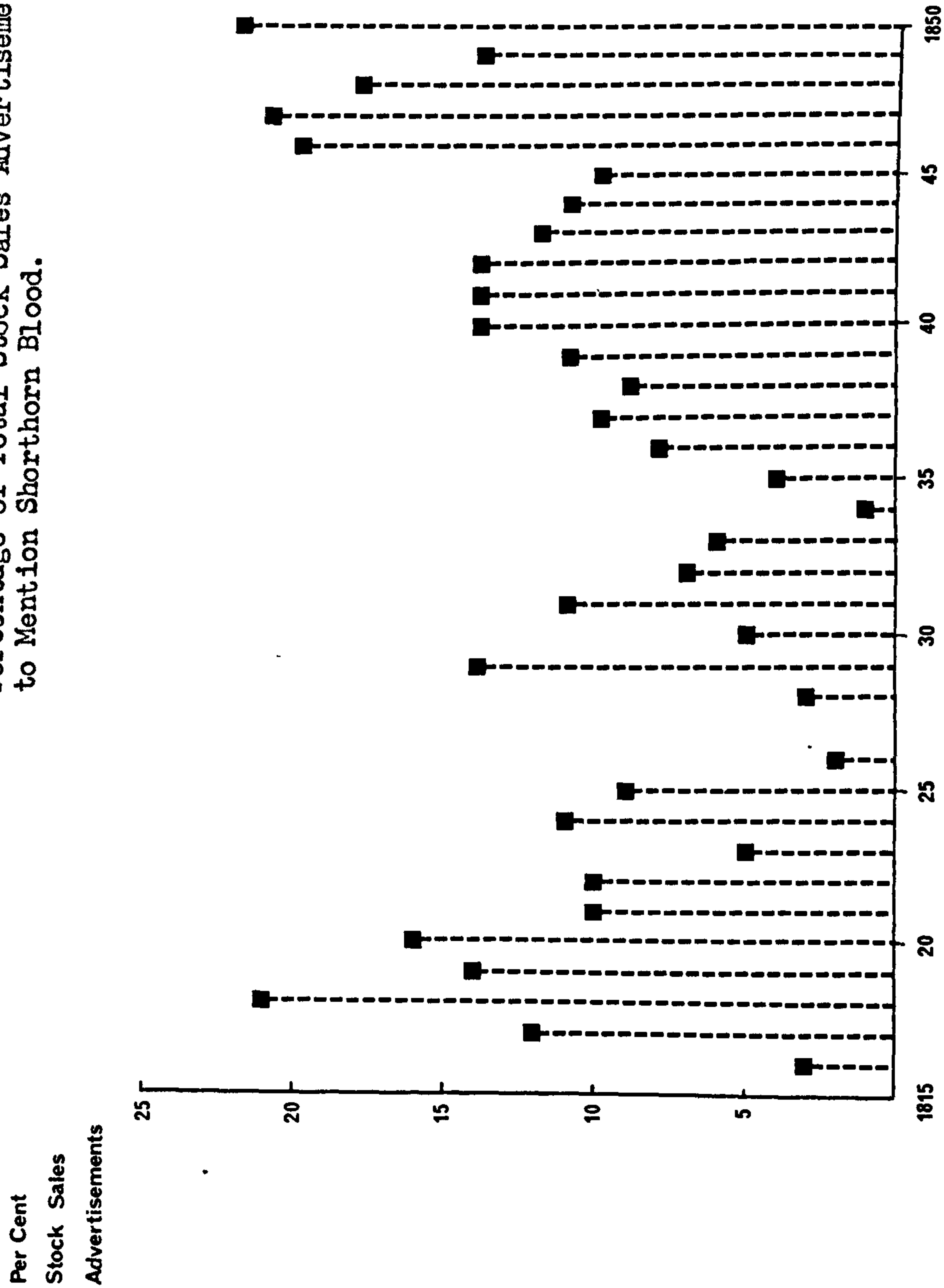
242 N.C., April 2nd 1847.

Figure 14:6 shows the percentage of total stock advertisements to mention Shorthorn blood; Map 14:5 shows the distribution of farms possessing Shorthorns. This map contrasts fairly sharply with Map 14:4 and suggests that Shorthorn blood was very much more widely dispersed than specialist Shorthorn breeders. Figure 14:6 gives some suggestion that it was not until the middle of the 19th century that many Northumberland farmers thought it worthwhile incorporating much Shorthorn blood in their stock. Shorthorns were certainly widely distributed from the earliest years of the century, but it is thought that substantial crossing with Kyloe stock was very much more common at this period. An octogenarian speaking in the 1880s of Morpeth Market before 1835 described the cattle there as "all of the primest shorthorn breed".²⁴³ As he was certainly referring to cattle brought from most of southern Scotland as well as Northumberland, this could not possibly have been true, but it does point to a situation in which the term 'Shorthorn' was almost synonymous with improved cattle, particularly a Kyloe-Shorthorn cross. As late as 1860, the Chairman of the Newcastle Farmers' Club could refer to the pure breed of Shorthorn as cattle "which were now becoming more generally known".²⁴⁴ It would seem that early and eager steps in the improvement of cattle were not one of the triumphs of Northumberland agriculture. Reaction to oil cake and stall feeding as well as to increased purity of what was probably the best stock available suggests either that existing methods were sufficiently profitable or that new ones offered chances of increased profit too slim to be likely to compensate substantial outlay. The suggestion may also be that interest in the improvement of livestock was directed much more towards sheep than towards cattle.

243 'The Old Cattle Market at Morpeth', c.1880.NCRO/Morpeth Collectanea.

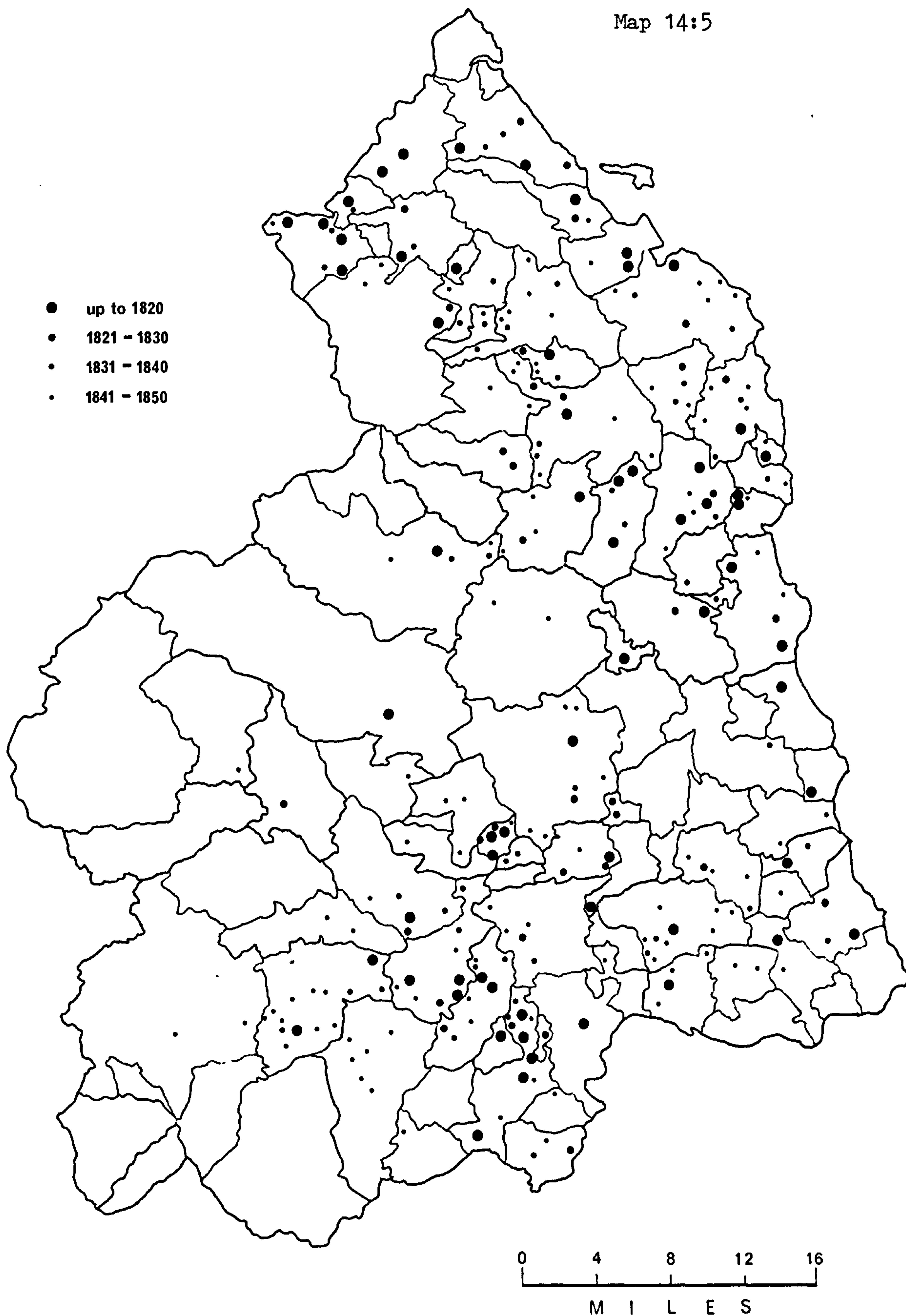
244 Proceedings of Newcastle Farmers' Club, May 5th 1860. L. & P. Bolbec, N630.6/3, p.7.

Figure 14:6
Percentage of Total Stock Sales Advertisements
to Mention Shorthorn Blood.



Source: Newcastle Courant Stock Sales Advertisements, 1816-1850.

Map 14:5



Distribution of Shorthorn Blood in Stock Sales.

Source: Newcastle Courant Stock Sales Advertisements to 1850.

XV

CROPS

The balance between arable and pastoral land use having been considered and the pastoral aspect of this division more closely studied in the section on livestock, it is meet that comparable attention be paid to the arable process, to cropping in the County. This section will deal with the significance of the main individual crops, particularly their relative importance to each other, and with what changes, in so far as they can be traced, each experienced. It will also deal with developments in crop yields and rotations.

Too much emphasis is often placed on wheat and especially wheat prices as indicators of the course of English agriculture. In more southerly counties this may be understandable, if not excusable, but in Northumberland, greater care is needed. Wheat was never the dominant crop in the County, oats always taking that position. Nor did it form more than a minor part of the diet of either urban or rural population in the 19th century, and certainly much less had been eaten locally in the 18th century. Most Northumberland wheat was exported via Berwick, Alnmouth or Newcastle or any of the many lesser ports. In 1795, Northumberland was said to have been self-sufficient in grain as long as too much was not sent "Coastways".¹

It is also unwise to draw conclusions about agricultural prosperity from price levels. Poor harvests might have meant the farmer had little grain with which to take much advantage of consequent high prices, and that he might well have been better off with average or even low prices and a greater quantity of grain to sell. Conversely, farmers could be much more apprehensive of a good year than a bad one. In a good year, harvest costs would be high and prices probably low; in a bad year,

¹ Return for 'Eglington', 1795, PRO/HO/42/55/342.

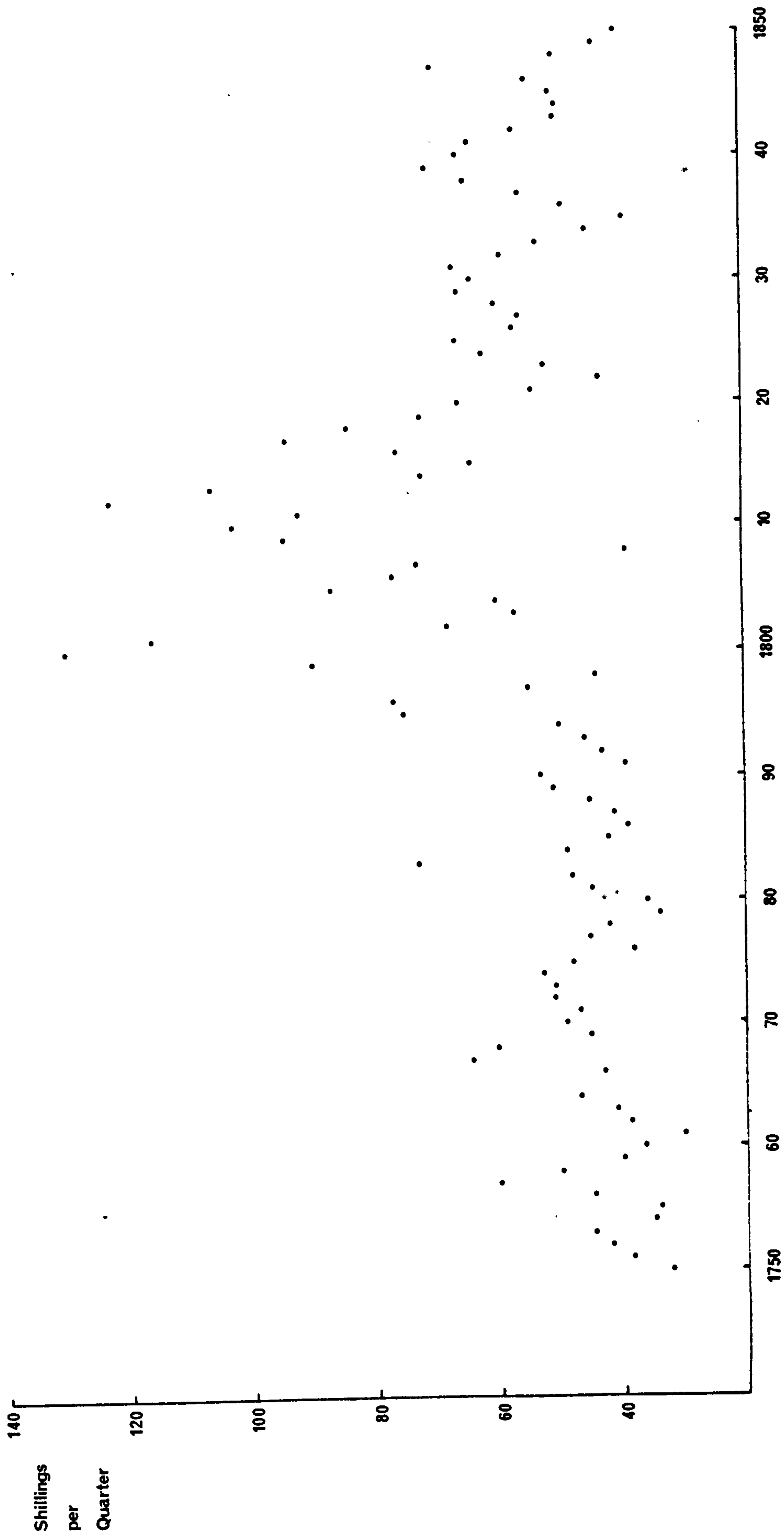
harvest costs were at least low and a small crop at high prices could be very remunerative.² There may also be some justifiable doubt about the accuracy of price returns. A great deal of difference, for example, could exist between the price given for first grade grain and that for second, third, or even lower quality grain, the bulk of the crop. As John Bailey complained in 1818, "more accurate returns of Prices sh^d be made from the Clerks of the Markets - I believe that for the last year they have only returned the highest prices, - when most probably one fifth of what was sold was of that description".³

Nevertheless, in the absence of other evidence, price levels must be used, though with some reservations, as a guide to the economic incentive for growing one crop rather than another. Figure 15:1 shows British wheat prices for the century 1750 to 1850 and makes very clear the exceptionally high prices pertaining during the years from 1795 to 1818. Times of scarcity and high prices had been known before, in 1757, 1767-8 and 1783, but there had been nothing to rival the Napoleonic War period. Yet, it should be remembered that there were years of low wheat prices during the same period. Wheat prices in 1808 matched those of the lowest years of the whole century and other years were far below the peaks of 1800, 1801 and 1812. Very high prices, such as the £7.12.3 given per quarter of wheat in August 1812, were generally of short duration and usually applied only in the summer months when most farmers had little grain left to sell. Figure 15:2 shows the months in which the lowest monthly British wheat prices occurred between 1793 and 1837, and Figure 15:3 the average monthly prices of wheat, barley and oats at Berwick Market between 1761 and 1795. There can be no doubt that, despite annual variation in grain price, there was a general decline in the price of all grains as the harvest came in. Over the 35 years between 1761 and 1795 in Berwick there

2 Anon., An Inquiry into the Causes of the Present High Prices... 1767, p.82.

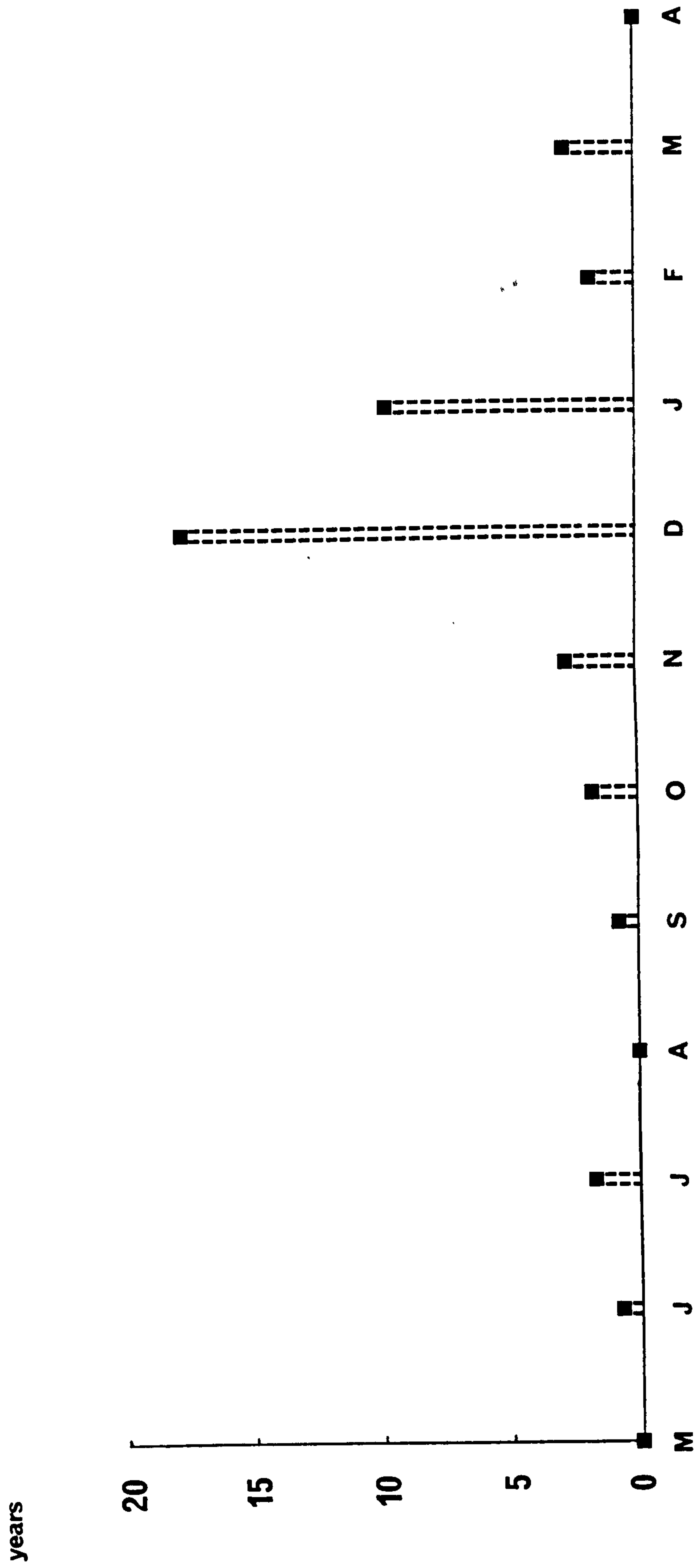
3 John Bailey to Sir J.B. Riddell, Nov.16th 1818, NCRO/ZRW/293. The Quarter Sessions Returns for Northumberland do not survive for the period 1750-1850.

Figure 15:1
British Wheat Prices Per Quarter.



Source: Matthew Bell to Newcastle Farmers' Club, Jan 1854. Seymour Bell, Collections Relating to Agriculture, NCL/L630.

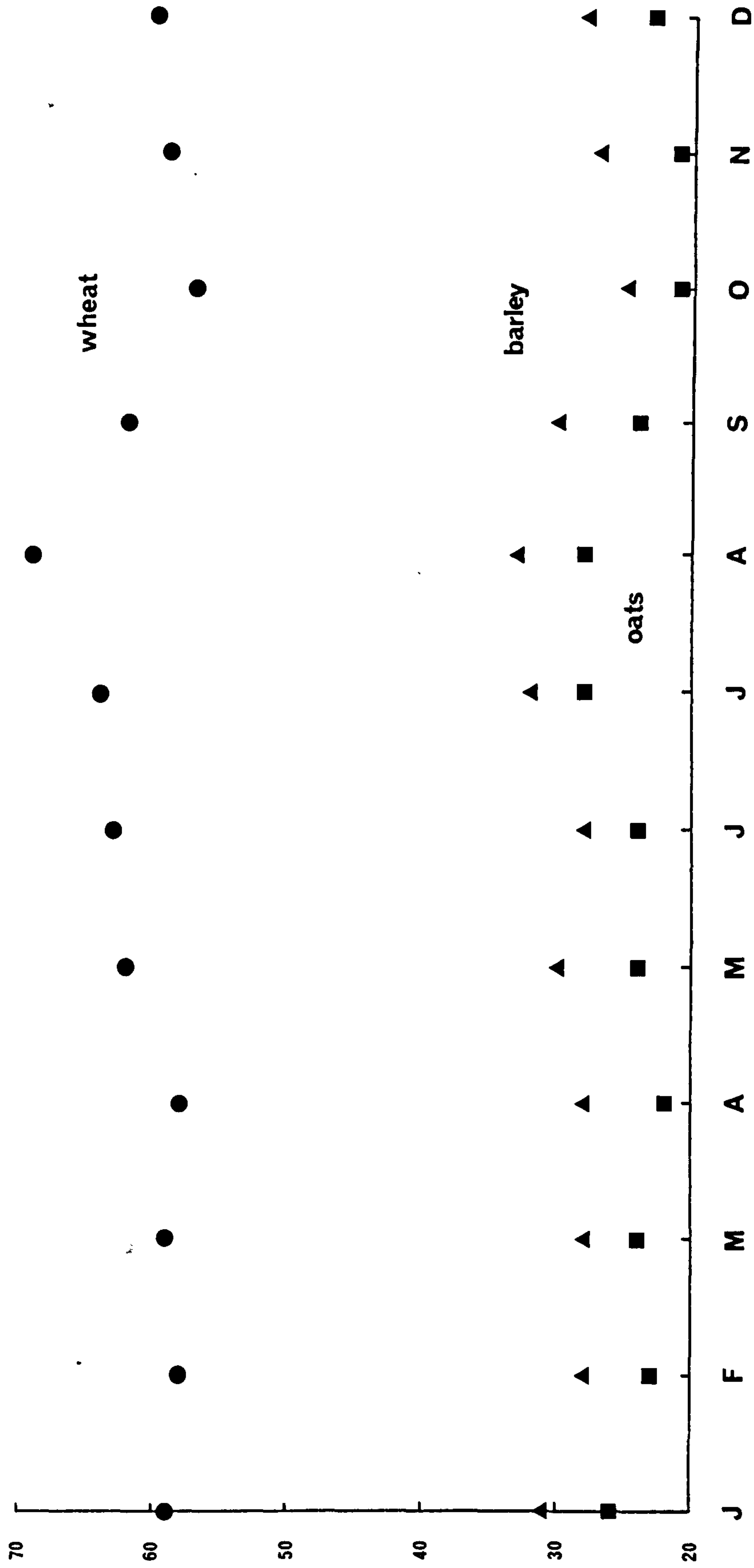
Figure 15:2
Months of Lowest British Wheat Prices, 1793-1837.



Source: T Tooke, History of Prices, 1926, p.390.

Figure 15:3
Seasonal Variations in Grain Price, 1761-1795.

Pence
per
Bushel



Source: BCA, Berwick Town Hall, Room 3, G/X/15.

was a 17% decline in the price of wheat between August and October and 24% in both barley and oat price. This is attributed solely to the effect of increased supply with the new harvest. Just how anxious farmers were to sell their grain despite reduced harvest prices can be seen from Figure 15:4 showing the numbers of farmers selling grain at Alnwick Market between September 1821 and December 1825. It seems clear that, far from forestalling, farmers were willing to suffer considerable loss in order to turn their grain into cash as soon as possible, a situation which emphasises the advantage of the larger farmer with capital who could afford to wait until the following summer before selling his grain.

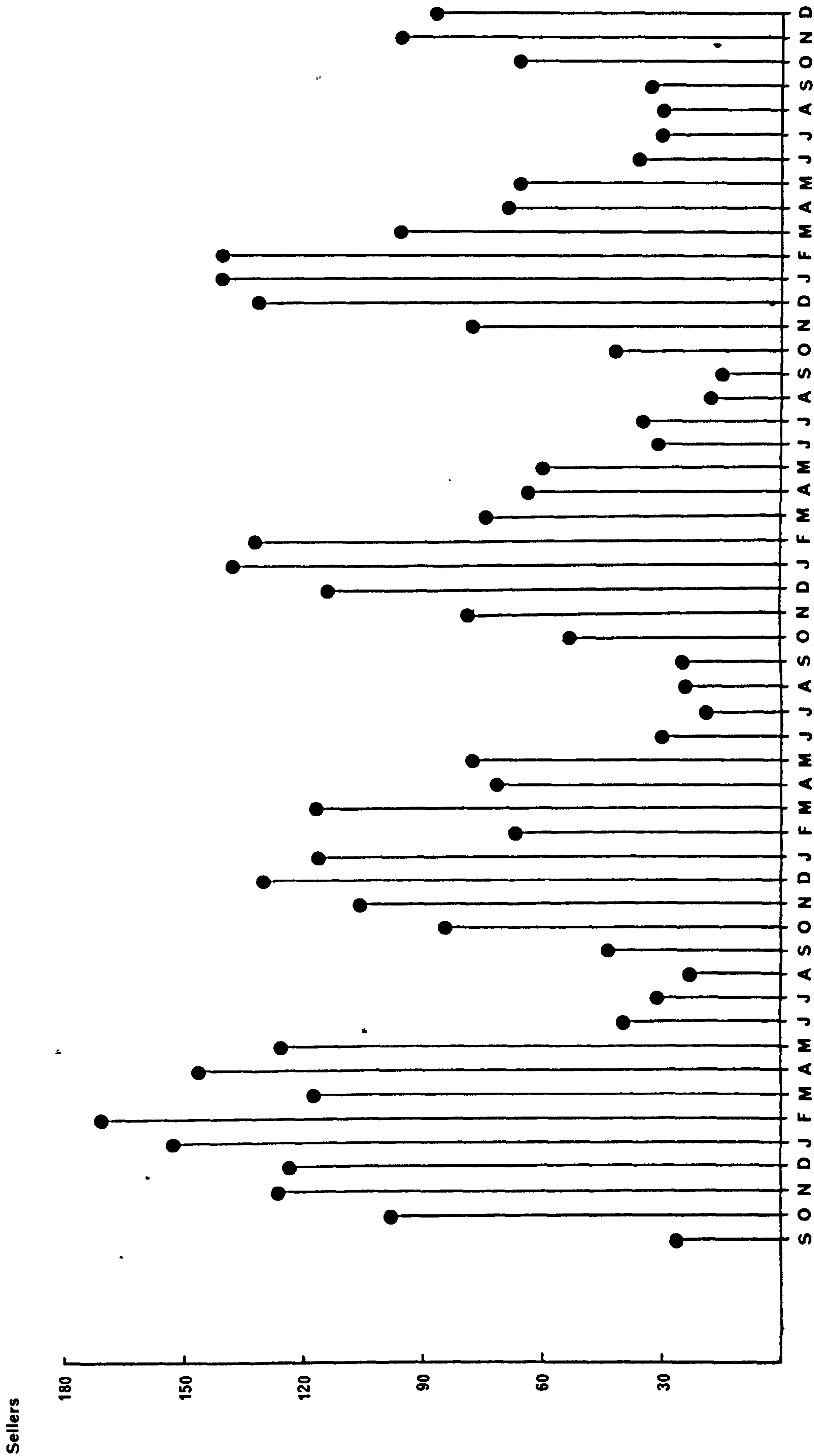
In defense of the use of wheat prices as an index of agricultural opportunity if not actual prosperity, it has been argued that they were always representative of all grain prices. "The general word Corn [could be] ... substituted for Wheat, because it appears that all sorts of bread-corn have in all times borne a price very nearly proportionate to each other."⁴ Table 15:1, comparing Northumberland prices for oats and barley with those given for wheat by decade from 1761 to 1840, confirms a fairly constant proportional relationship, with barley, maintaining about 53% of wheat price throughout the period and oats about 41.5%. Figure 15:5, comparing wheat prices at Alnwick and Berwick Markets, suggests that price levels did not vary drastically from market to market, although the occasional trough at Berwick in 1823 and 1824 did not appear at Alnwick. There was also close relationship between London and Northumberland prices as is shown in Figure 15:6, though Northumberland prices, shown in Figure 15:7, were nearly always lower than those at London. In the 1780s it was reckoned that London was the cheapest market in the country with the exception of only three counties.⁵ Northumberland

4 Edward Wilson, *Observations on the Present State of the Poor*, 1795, p.13.

5 A.A., 3, 1785, p.456.

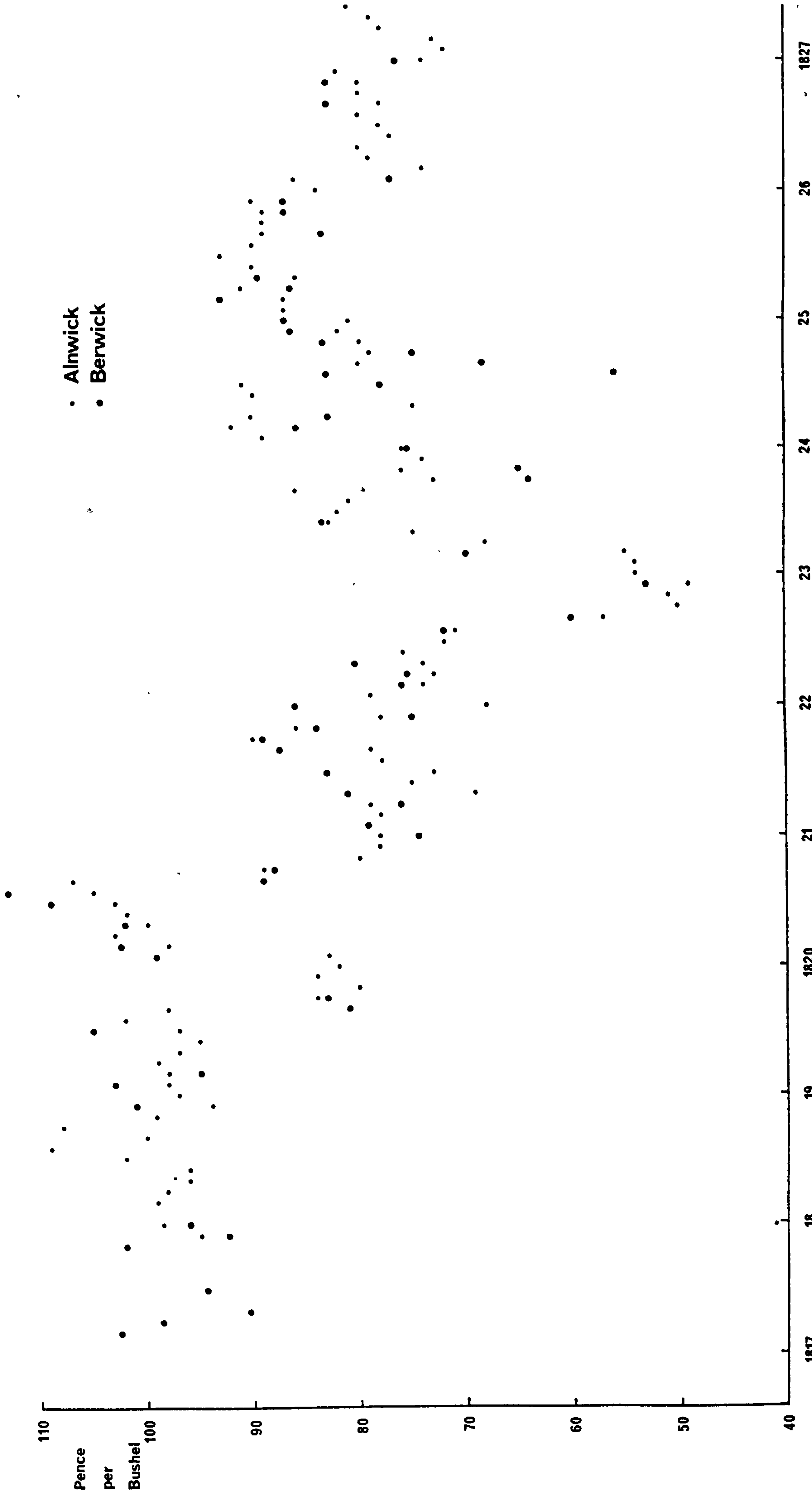
Figure 15:4

Numbers of Sellers of Grain of all kinds at Alnwick Market,
September 1821-December 1825.



Source: NCRC/ZMD/167/29.

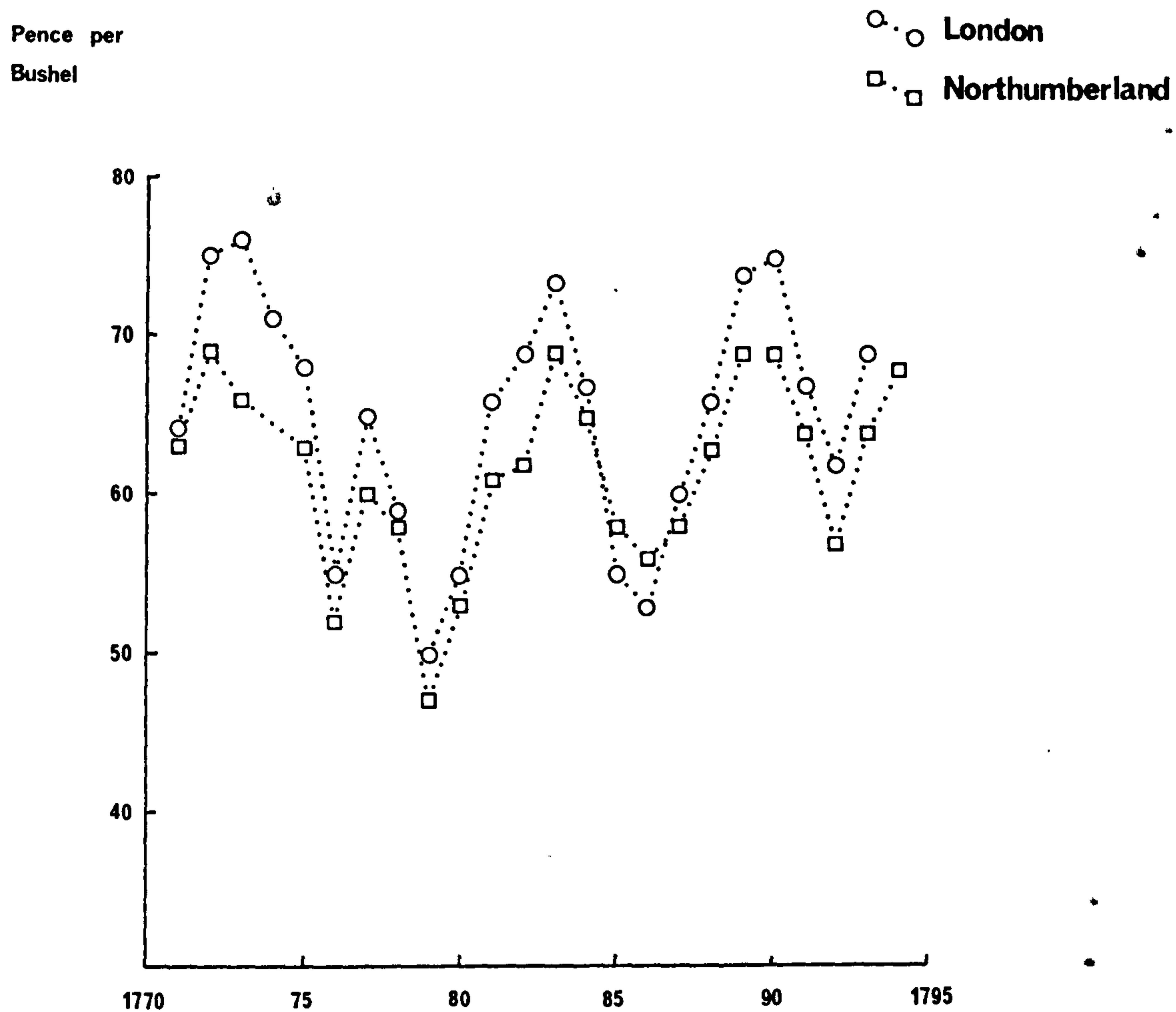
Figure 15:5
Monthly Wheat Prices at Alnwick and Berwick Markets.



Sources: Alnwick - NCRO/ZMD/167/29. Berwick - BCA, Berwick Town Hall, Room 3, G/X/15.

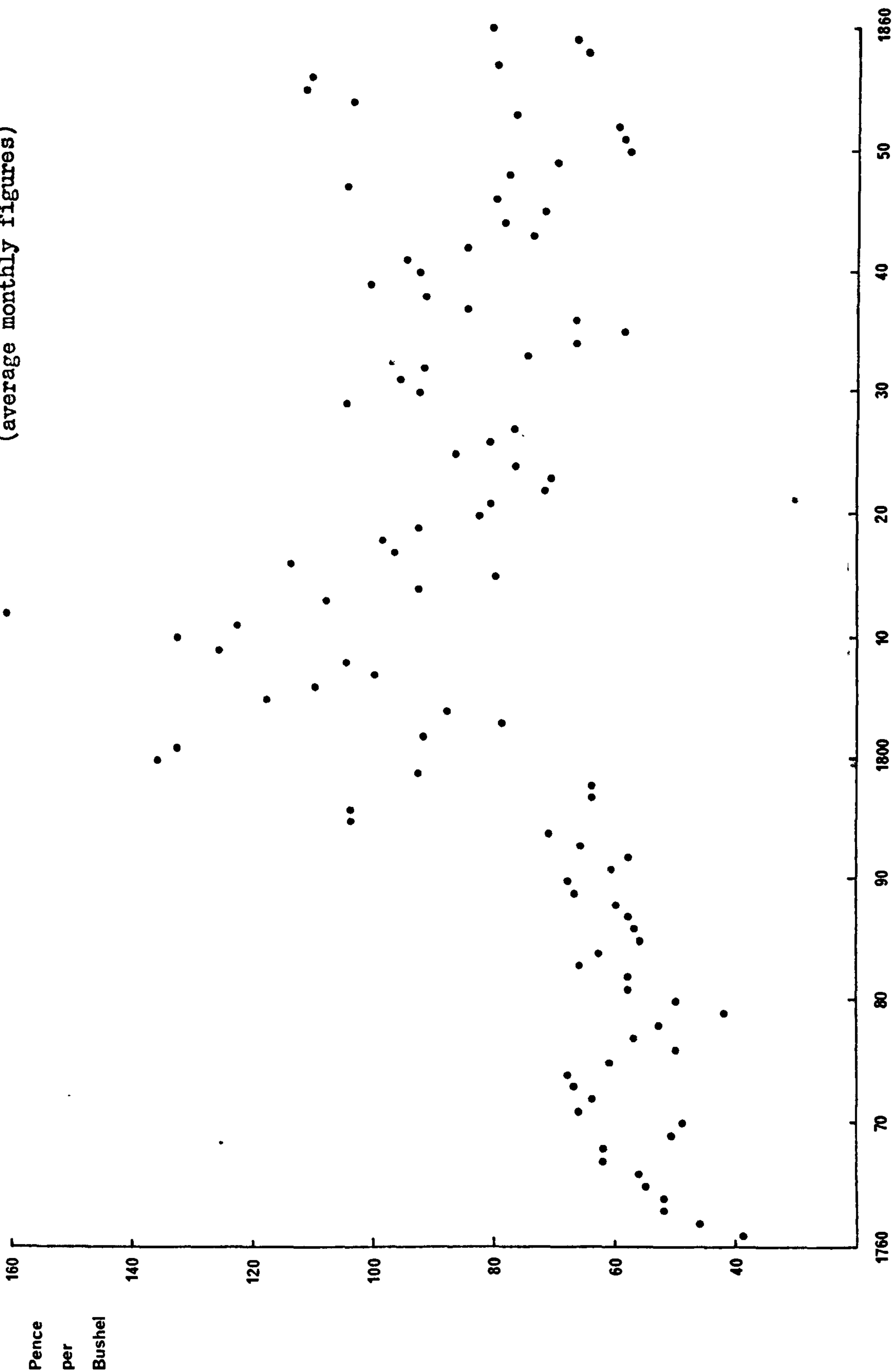
Figure 15:6

Comparison of London and Northumberland Wheat Prices,
1771-1794.



Source: Annals of Agriculture, 1771-94.

Figure 15:7
Northumberland Wheat Prices, 1761-1860.
(average monthly figures)



Sources: 1761-1827, BCA, Berwick Town Hall, Room 3, G/X/15. 1829-60, NCRO/ZSA/12/16.

was one of these counties. In 1850, it was observed that "Northumberland Wheat averages $1/3$ per Quarter less than that of England generally: Barley $1/8$ per Quarter less, and Oats, $1/1$ per Quarter more, on the same comparison",⁶ As Northumberland grain included superior foreign corn imported and sold at Newcastle, the real difference was probably greater.

Table 15:1

Comparison of Barley and Oat Prices with Wheat Prices
in Northumberland, 1761-1840

	W H E A T	B A R L E Y		O A T S	
	pence per bushel	pence per bushel	% of Wheat Price	pence per bushel	% of Wheat Price
1761-1770	52.4	26.0	50	22.3	43
1771-1780	57.8	26.9	47	22.2	38
1781-1790	61.1	30.5	50	24.4	40
1791-1800	82.1	43.3	53	35.8	44
1801-1810	108.4	60.4	56	43.7	40
1811-1820	105.1	60.8	58	46.0	44
1821-1830	82.7	48.2	58	34.8	42
1831-1840	82.7	43.3	52	34.3	41

Sources: B.C.A., Berwick Town Hall, Room 3,
G/X/15.

A.A., 1795-99

F.M., 1800-01

Bamburgh Corn Prices, NCRO/NRO/452/D/
5/104.

Wheat

Wheat is tolerant of a wide variety of soil conditions, but its great limiting factor, especially in Northumberland, where spring may be late, is the long growing period it requires, longer than that of any of the other corn crops.⁷ Its advantage lay in being the most valuable kind of grain and the least precarious to grow on strong and heavy soils.⁸

6 Hugh Taylor's Calculations on Farm Produce 1850, AC/N/3/13. Bailey and Culley had made the same observation, that Glendale oats sold in London for $1/6$ per quarter more than others and were known as Berwick oats. Bailey and Culley, 1805, p.85.

7 David Thomas, The Agriculture of Wales during the Napoleonic Wars, 1963, pp.60-1.

8 James Donaldson, Modern Agriculture, 1795, 2, p.190.

Consequently, Map 15:1 confirms that it was grown extensively throughout eastern Northumberland and on parts of south Tyneside in 1801. The west of the County, with its shorter growing season, did not specialise in wheat cultivation. It is likely that Map 15:1, compiled from returns made during a time of very heavy wheat prices, represents an uncommonly high wheat acreage. It is known that even the best farmers were breaking rotation and taking an extra crop of wheat long before wheat brought the astronomic prices of the early years of the 19th century. In 1790, Culley was taking catch crops of wheat and thinking it "the more excusable, while Wheat sells so well".⁹ But it was a risky business in many parts of the North and only to be attempted when prices were very high. In the same year, Culley wrote that high winds had damaged the wheat crop so much that "not less than one quarter and a half per acre, is wasted over all this county, and a considerable way into Scotland, especially near the sea, which is the principal wheat country, both in Northumberland and Scotland..."¹⁰

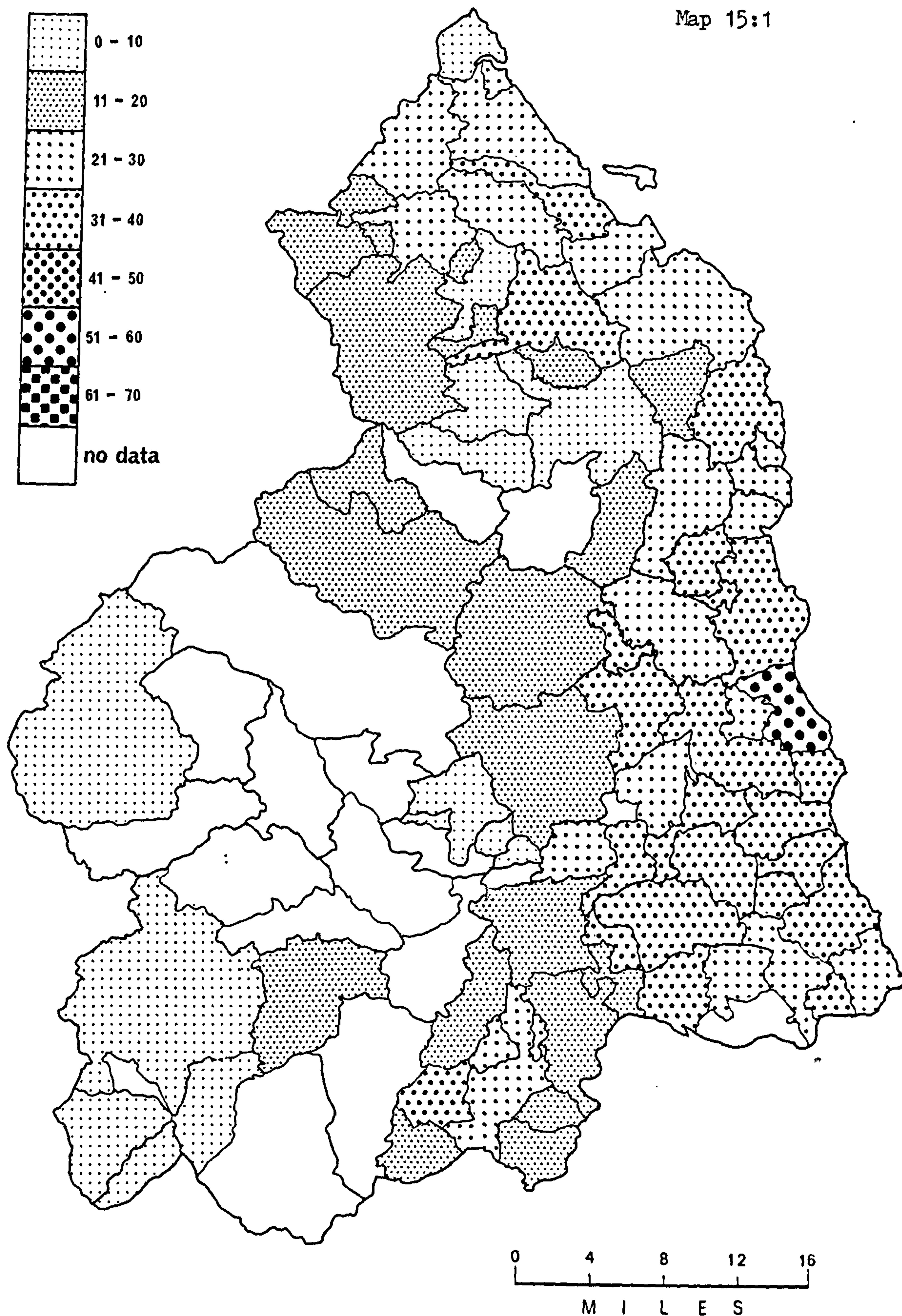
Map 15:2 shows the importance of wheat relative to other crops in 1867. There can be no doubt that, although total wheat acreage had declined by about 11% between 1803 and 1867 (see p. 217), its shift in emphasis in the County had been much more marked. The north of the County and all the western section were much less interested in wheat in 1867 than they had been in 1801. The area of wheat specialisation had contracted and was confined primarily to the heavy soils of the south-east and, to a lesser extent, the coast as far north as Bamburgh. Table 15:3 confirms the reduction in the relative importance of wheat throughout the County and Table 15:2, compiled from Hugh Taylor's estimates of 1852,¹¹ agrees with the general conclusion that by mid-century, wheat was of little

⁹ George Culley to Arthur Young, Dec.8th 1790. NCRO/ZCU/3.

¹⁰ A.A., 14, 1790, p.253.

¹¹ NCRO/ZHE/34/1.

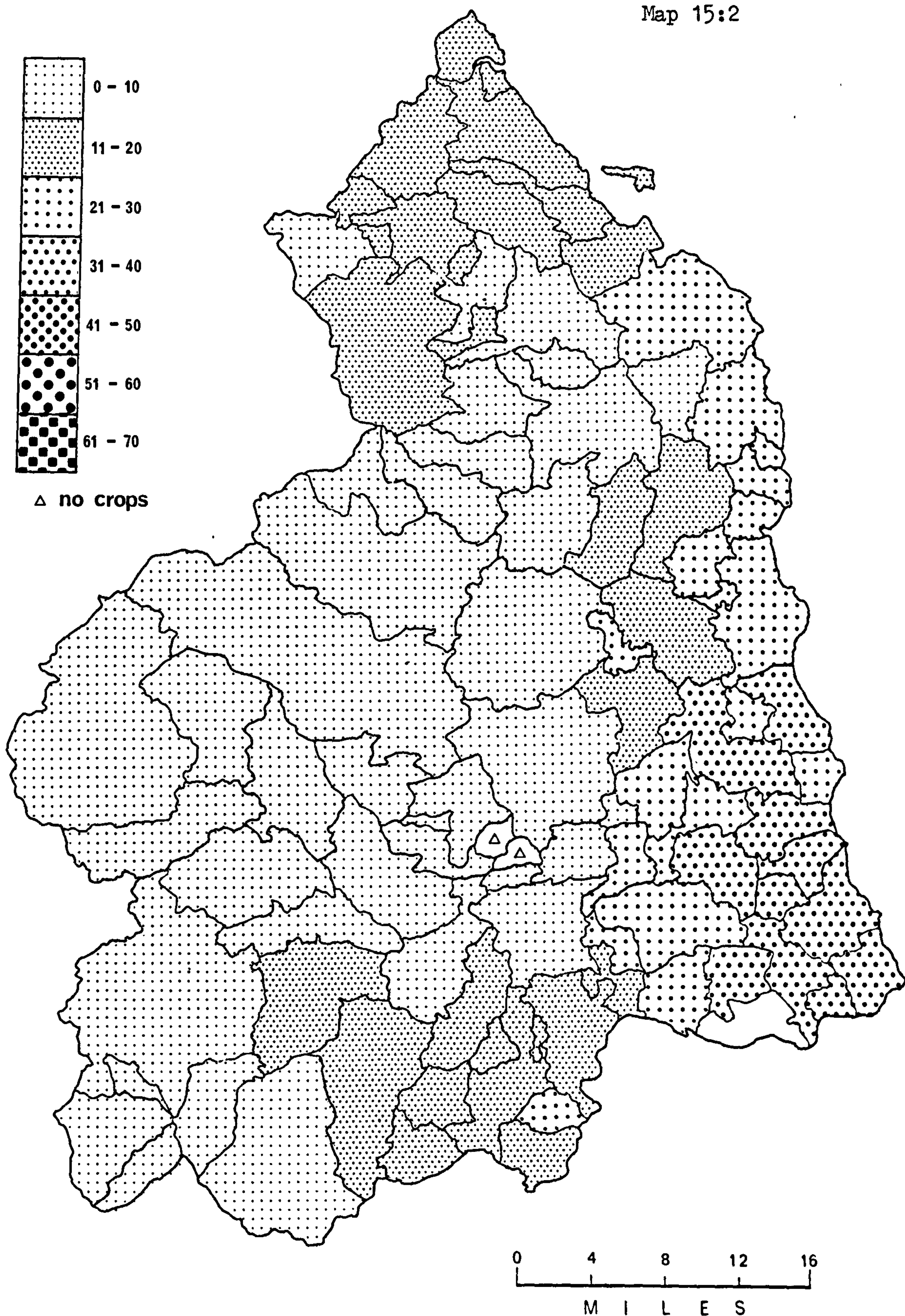
Map 15:1



Wheat Acreage as Percentage of Total Crop Acreage
by Parish, 1801.

Source: 1801 Crop Returns, PRO/HO/67/8.
(Figures for Ulgham, Kirkhaugh and Whitfield Parishes, 1803, in
John Hodgson, History of Northumberland, 1832, 2(2), p. 370;
2(3), pp. 58, 97.)

Map 15:2



Wheat Acreage as Percentage of Total Crop Acreage
by Parish, 1867.

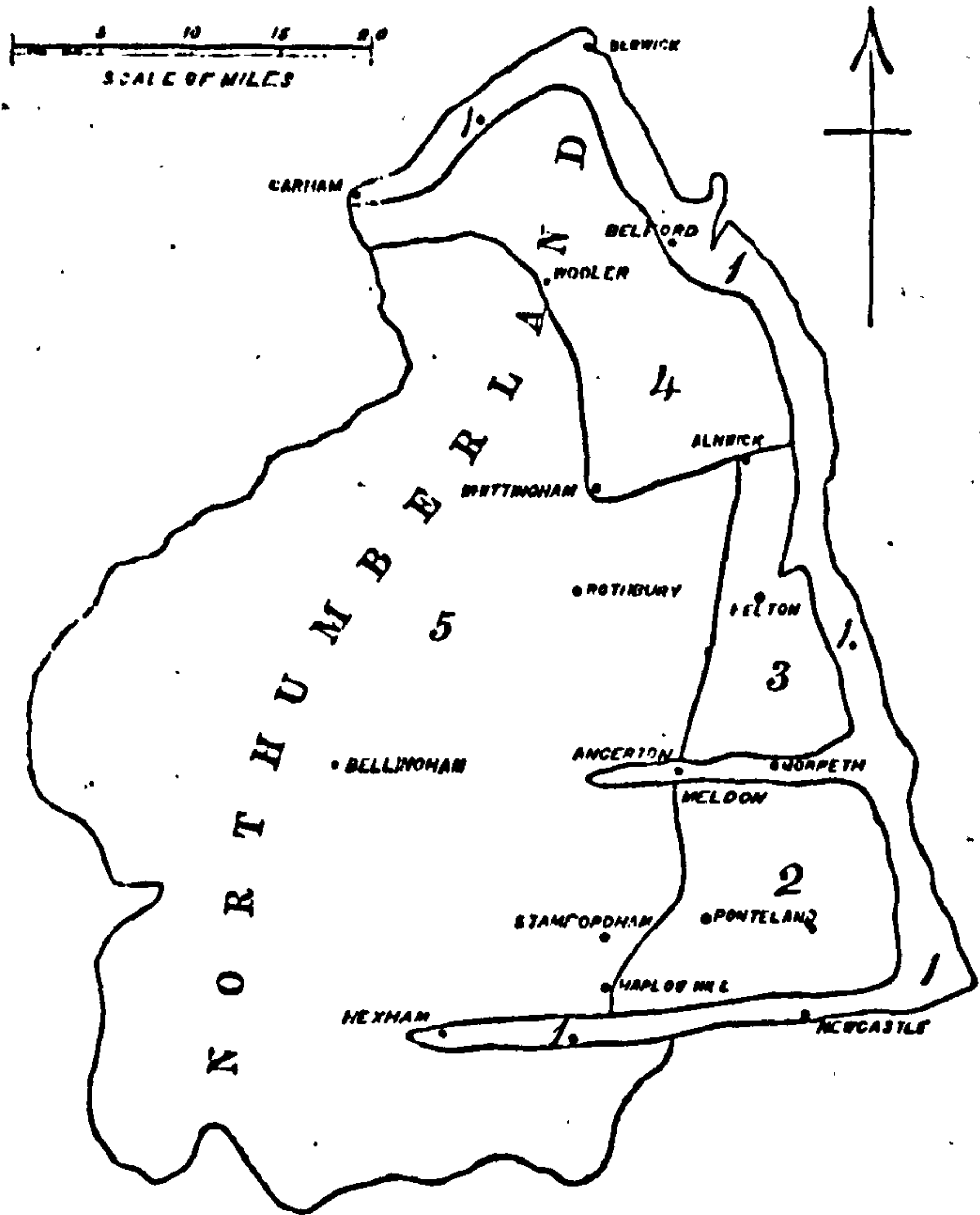
Source: 1867 Agricultural Census,
PRO/MAF/68/139.

Table 15:2

Crops as Percentage of Each Regions Total Crop Acreage by
Taylor's Divisions, c.1852.

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
WHEAT	33	34	37	5	11
BARLEY	8	7	5	20	21
OATS	25	41	49	33	38
TURNIPS	20	8	5	31	24

Source: Hugh Taylor's Estimates,
NCRO/ZHE/34/1.



Source: Hugh Taylor to Newcastle Farmers' Club, March 6th 1852.
L. & P., Bolbec N630.6/2.

importance in either the north or the west.

Table 15:3

Northumberland Crop Acreage

	1 8 0 3*		c. 1 8 5 2		1 8 6 7	
	acreage	% of total crop acreage.	estimated acreage	% of total crop acreage.	acreage	% of total crop acreage.
WHEAT	43003	23	62500	22	38357	19
BARLEY	23983	13	40500	14	28743	14
OATS	76864	42	97242	35	69798	34
TURNIPS	26759	14	58476	21	50881	25

Sources: 1803 - AC/Y/4/2/b/5

* Durham parts of Northumberland from 1801
Crop Returns PRO/HO/67/8

c.1852 - Hugh Taylor's Estimates, NCRO/ZHE/34/1.

1867 - Agricultural Census, PRO/MAF/68/139.

Table 15:4 shows an appreciable decline in contributions to the total County wheat acreage from the whole western half of the County between 1803 and 1867.

Although Bailey and Culley decided that the types of wheat used in the County at the turn of the century were too numerous and were known by too many different local names to be described accurately, they did refer to a general tendency to change seed and to use varieties "imported from distant parts".¹² Culley himself bought seed from Burwell in Cambridgeshire,¹³ and newspaper advertisements from seed merchants mentioned seed wheat from Kent,¹⁴ Essex¹⁵ and even Syria.¹⁶ Of more interest is the practice of spring sowing rather than winter sowing wheat which Marshall seems to have found curious,¹⁷ and which Culley claimed

¹² Bailey and Culley, 1805, p.73.

¹³ George Culley to Sir John Sinclair, Feb.19th 1810.NCRO/ZCU/2.

¹⁴ N.C., Oct.27th 1787 and Oct.22nd 1796.

¹⁵ N.C., Oct.14th 1809.

¹⁶ N.C., Nov.12th 1796.

¹⁷ William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 1808-18, 1, p.76.

Table 15:4

Percentage of pre-1844 County Acreage of Each Grain
in Each Ward, 1803 and 1867

	Acres	% of County Wheat Acreage	Acres	% of County Wheat Acreage	Acres	% of County Barley Acreage	Acres	% of County Barley Acreage	Acres	% of County Oat Acreage	Acres	% of County Oat Acreage
Bamburgh	4706	12	5142	15	1810	8	3453	14	5947	8	7510	12
Morpeth	8376	21	6944	21	1622	8	1800	8	11779	17	10346	17
Castle	8305	21	9718	29	2482	11	1716	7	11017	16	10924	17
Glendale	4302	11	3206	10	2927	13	6339	26	7661	11	8049	13
Coquetdale	5147	13	3066	9	3476	16	4471	18	13559	19	10606	17
Tindale	8136	21	4824	14	9103	42	5912	24	20137	28	14609	23
Berwick	265	1	562	2	461	2	722	3	663	1	810	1
TOTAL	39237	100	33462	100	21881	100	24413	100	70763	100	62844	100

Sources: 1803 - E.M^cKenzie, History of Northumberland, 1, 1825, p.222
1867 - Agricultural Census, PRO/MAF/68/139.

to have been one of the first Northumberland farmers to try when he moved to Glendale in 1767.¹⁸ This was not the Siberian or real Spring Wheat that was in use in north Northumberland, but simply ordinary seed sown from February to early April rather than in the period from September to November. The reason for doing this was to be able to take a crop of wheat after turnips on lands where these replaced the naked fallow. Normally the turnips would not be off the ground until late winter and could be followed only by oats sown in March or April, or barley, sown in April or May. The attraction of the more valuable wheat crops was obvious, but especially so in the north where the barley was always of poor malting quality. In 1801, Culley wrote that using more turnips enabled them "to sow more Spring Wheat, a very important thing here, where we can grow nearly as many Bushells of Wheat per acre as Barley. And Barley is always ill sold here!".¹⁹ It was the change to spring-sown wheat that was responsible for the rapid development of wheat-growing in Glendale and which enabled Culley to claim "a considerable part of our success in farming was owing to Spring sown Wht. Prior to our coming to this District, no Wht was grown in Glendale Ward, except in the Haughs by the Riversides, on some pieces of Strong land unfit for Turnips. But now & for many y^{rs}, thousands of acres have been sown with great success, with that most valuable grain; which had never produced Wht before".²⁰ Yet, by the mid-19th century, though wheat was still grown on turnip lands, barley was very much more common and the main wheat lands in the County were those that grew the crop after a summer fallow,²¹ though sometimes even these struggled to produce good wheat. The Delaval estates had shipped eggs, bacon and oats to London early in this period for the consumption of Sir John Delaval's household,

18 George Culley to Sir John Sinclair, Feb.19th 1810,NCRO/ZCU/2.

19 George Culley to John Welch, Dec.12th 1801.NCRO/ZCU/6.

20 George Culley to Sir John Sinclair, Feb.19th 1810.NCRO/ZCU/2.

21 Evidence of G.H.Ramsey to Select Committee on Agricultural Customs, 1848, p.195.

but sometimes had great difficulty procuring wheat good enough to be sent.²² Seymour Bell summed up the situation tersely but accurately much later, in 1860. "Northumberland never has, and except in favoured localities is not, and can not excel as, a wheat growing district."²³

Barley

The chief requirements for barley are a dry, cool climate and good drainage. It will not tolerate heavy or acidic soil and has a growing period very much shorter than that of wheat, normally being sown after turnips in April or May.²⁴ Map 15:3 shows the importance of barley in the parishes of Northumberland in relation to other crops in 1801, and indicates that barley was of greater significance as a crop in the south-west third of the County. It is not unlikely that the hardy but unproductive four-rowed barley (bigg or bear) was still being grown in these parts, largely for use as cattle fodder. In the north of the County, long-eared barley was cultivated, some for malting, but much for human consumption. A great deal of barley was eaten in Northumberland either in soups or in unleavened cakes.²⁵ Despite the nominally high prices, shown in Figure 15:8, for Northumberland barley in some of the War years, much local barley was of very poor quality and probably fetched much lower prices if it could be sold at all. In 1801, Culley referred to the growing of barley as "a safe game" at a "famous price" as long as the distilleries prospered.²⁶ But demand was not constant. In 1807, it was so small that it was said "most people endeavour to grow as little of it as they possibly can".²⁷ In East Lothian in 1811, it was estimated that, "not one fourth so much ground was occupied by barley in 1810, as carried that grain in 1778".²⁸ There

22 John Oxley to Sir John Delaval, Jan.26th 1768. NCRO/2DE/4/10/36.

23 Seymour Bell, Collections Relating to Agriculture c.1860, NCL/L630.

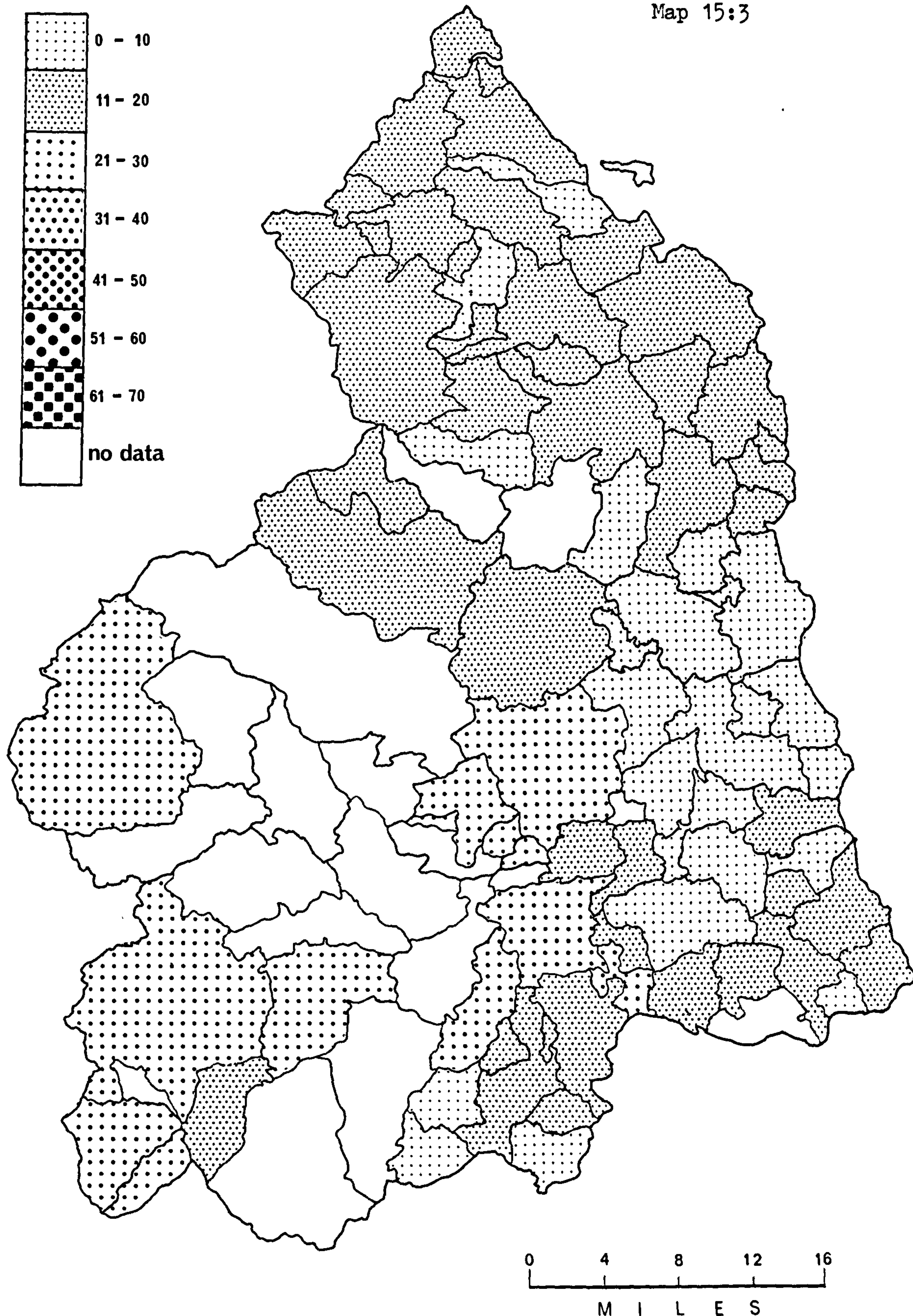
24 David Thomas, op.cit., p.65. 25 Bailey and Culley, 1805, p.82.

26 George Culley to John Welch, Dec.12th 1801.NCRO/ZCU/6.

27 F.M., 8, 1807, p.262.

28 F.M., 12, 1811, p.213.

Map 15:3

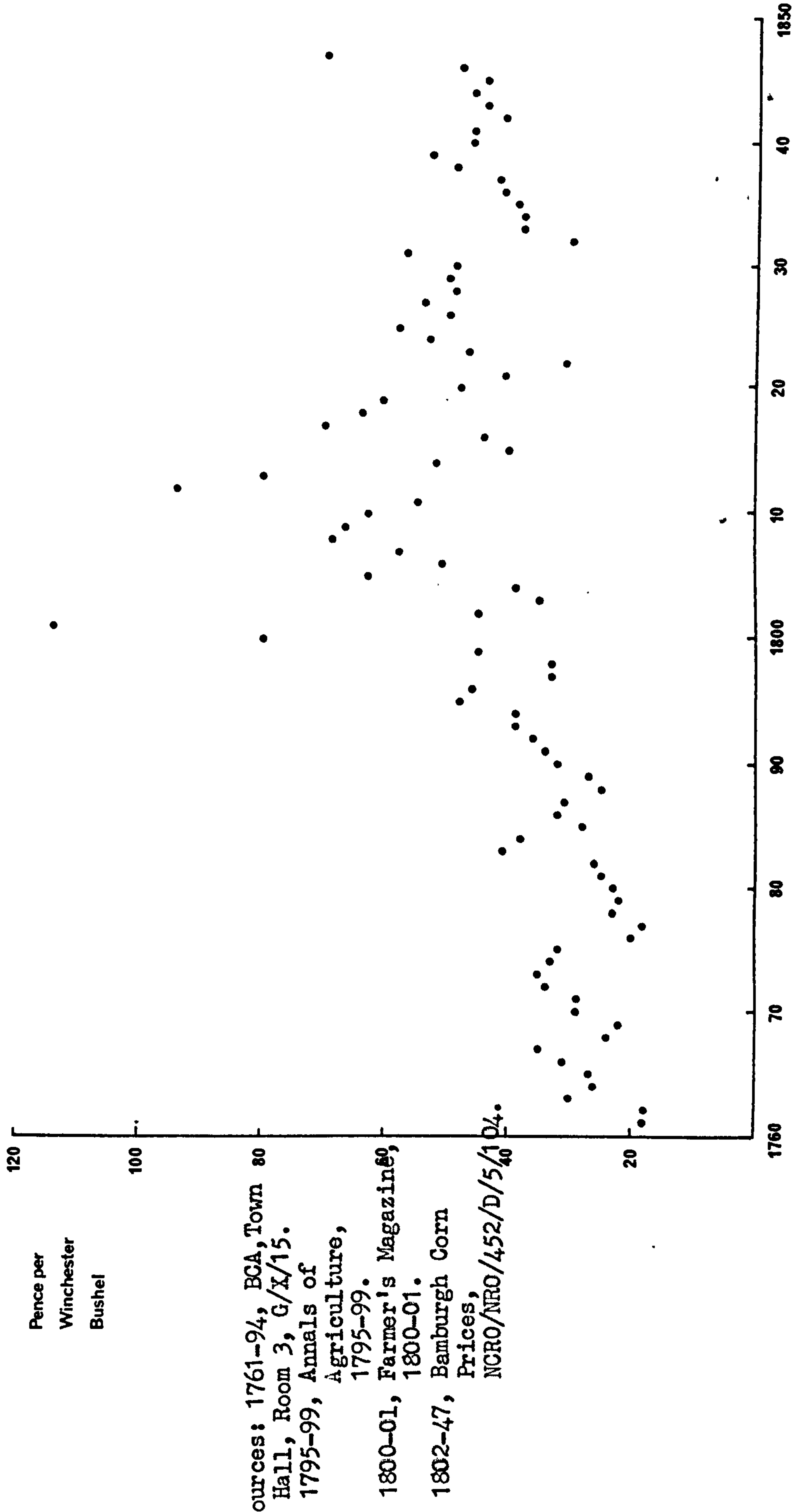


Barley Acreage as Percentage of Total Crop Acreage
by Parish, 1801.

Sources: 1801 Crop Returns, PRO/HO/67/8.
(Figures for Ulgham, Kirkhaugh and Whitfield Parishes, 1803,
in John Hodgson, History of Northumberland, 1832, 2(2),
p.370; 2(3), pp.58, 97.)

Figure 15:8

Northumberland Barley Prices
(average monthly figures)



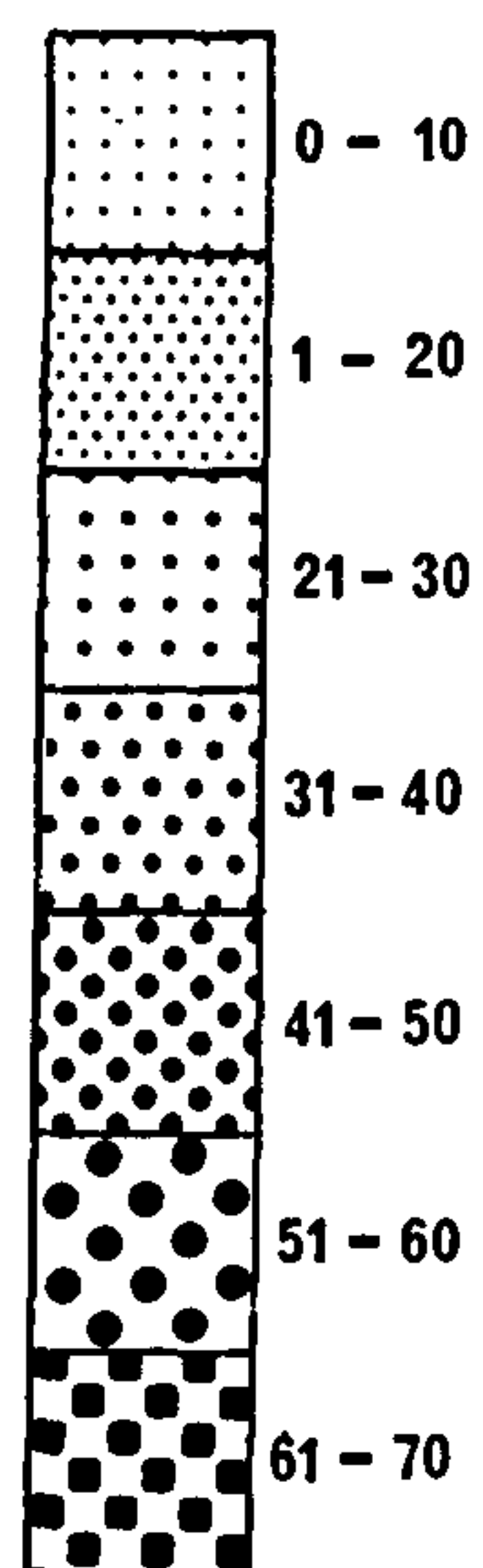
is no means of telling whether this had also happened in Northumberland, but it is likely to have done. Barley needed a light dry soil, the same requirements as turnips, and where the coarse bigg was still cultivated, it was largely for the same purpose as turnips. With the spread of turnips as a field crop, barley naturally suffered, particularly when the turnips were taken as a catch crop on drier patches of ground rather than in regular rotation. But even in rotation, though they were normally followed by barley, the most valuable grain crop with time enough to grow after the turnips had been taken off, this did not have to be the case once the advantages of spring-sown wheat became known. Another factor operated against the growing of barley in Northumberland; the fact that in the first half of the 19th century, both barley and oats were declining in popularity as human food.²⁹

Table 15:3 suggests that there was little change in the proportionate acreage used for barley rather than other crops during the first half of the 19th century, but Map 15:4 shows the situation in 1867 and emphasises some important changes. Barley had obviously become very much less important as a highland crop on marginal hill land, though its importance on some of the higher turnip soils of the north where spring wheat would have been a precarious crop, had increased considerably. The relative acreage of barley on the heavy soils of the south-east remained small, smaller if anything than it had been in 1801. When Joseph Oxley, land agent to Sir John Delaval and sometime inventor, erected a barley mill near Seaton Sluice in 1768, his action was severely criticised by a colleague who called it a facility "for which there is no Use in this part of the Country".³⁰ These findings are confirmed by the figures in Table 15:4, which show considerable increases in Bamburgh and Coquetdale and a doubling of the relative barley acreage in Glendale Ward. Tindale,

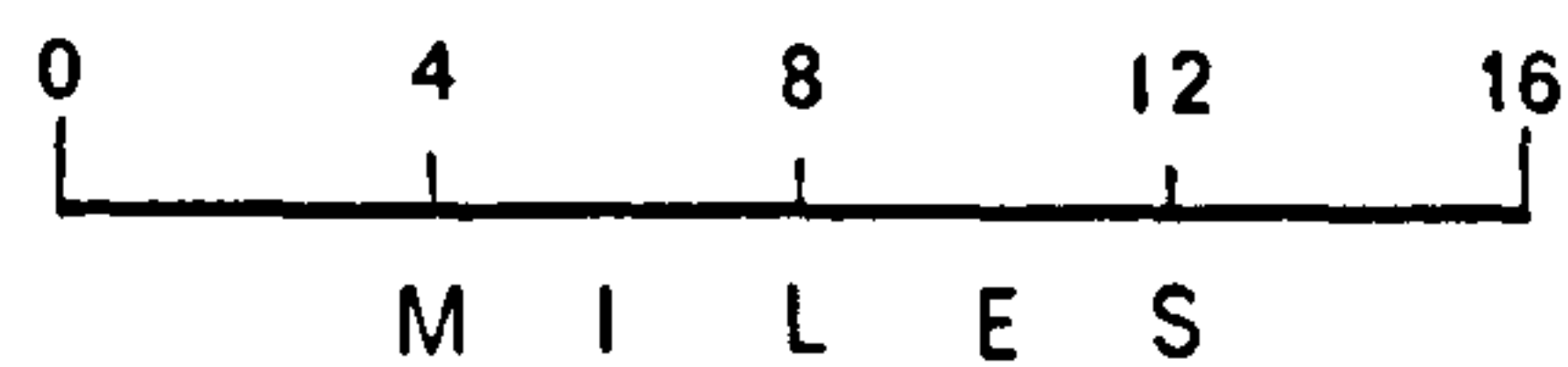
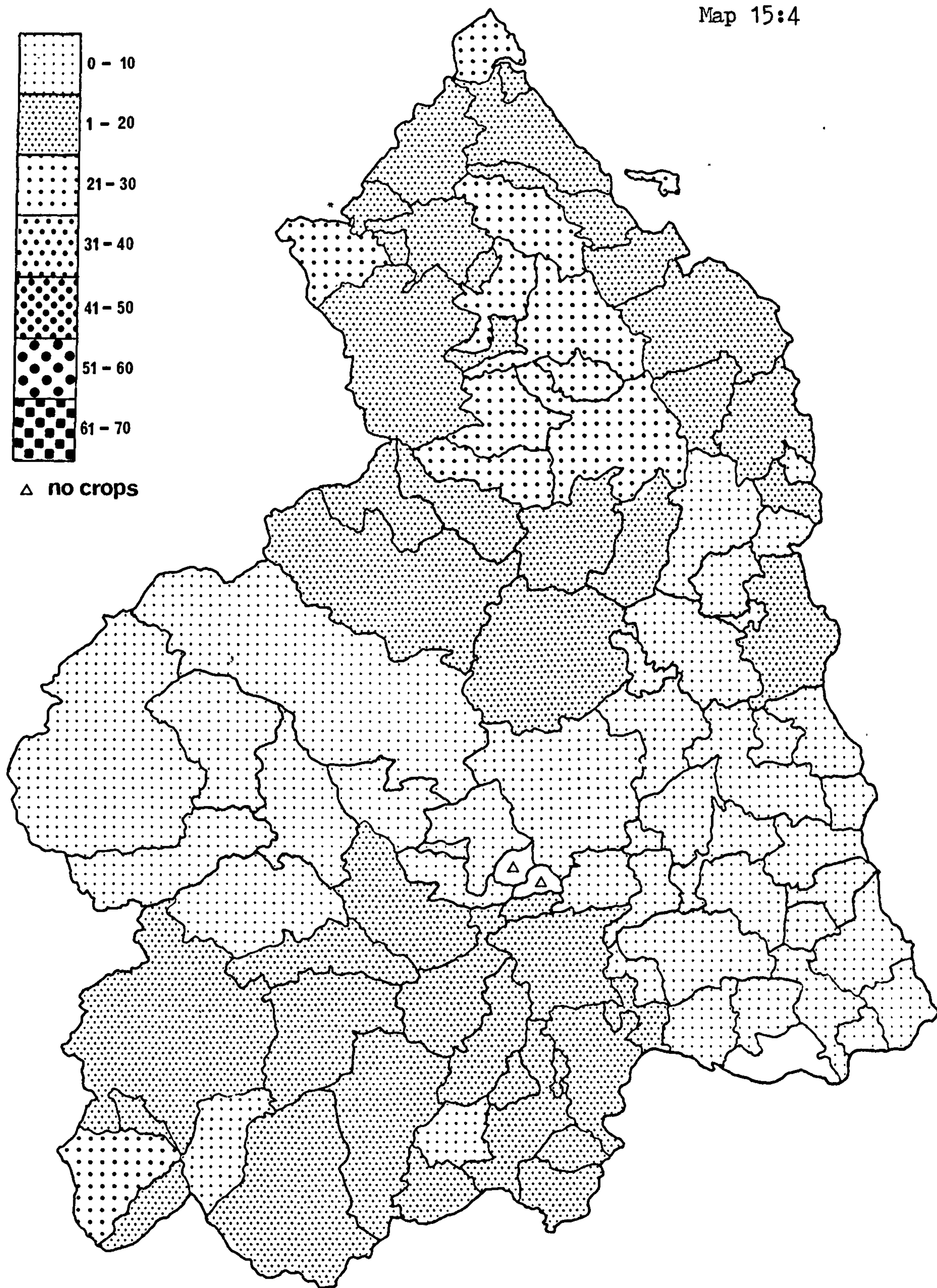
29 J.R.M^cCullōch, Statistical Account of the British Empire, 1837, 1, p.172.

30 John Ocheltrie to Sir John Delaval. Dec.2nd 1786. NCRO/2DE/4/43/35

Map 15:4



△ no crops



Barley Acreage as Percentage of Total Crop Acreage
by Parish, 1867.

Source: 1867 Agricultural Census, PRO/MAF/68/139.

comprising most of the far west and south of the County, almost halved what had been a very heavy dependence on barley. Table 15:2 confirms the relative unimportance of barley along the coast and in the south-east at mid-century.

An uncommonly productive strain of barley, called Siberian Barley, appears to have been introduced about 1770. It could be sown late, in a high situation and was not subject to shake.³¹ Although it created some excitement at the time,³² it does not seem to have endured and is not mentioned in the County Agricultural Report. Barley was imported, though perhaps for meal rather than seed, from Norfolk³³ and it was from thence that the famous Chevalier barley became available from at least 1835.³⁴

Oats

Oats can mature quickly, and are well adapted to cool, wet climates and are peculiarly unexacting as to soil requirements.³⁵ Table 15:3 suggests that they were easily the most popular crop in the County throughout the period. Considering the short growing season, high, wet and exposed location and poor soils of much of Northumberland, and the high price that oats grown on better lands in the County could yield (see Figure 15:9), this is perhaps hardly surprising. It is also relevant that there was heavy demand for oats from the local population, who ate them in a variety of porridges and gruels,³⁶ though, as with barley, oat-meal consumption was declining in the 19th century as wheat consumption increased.³⁷ Yet it would seem that Culley's claim in 1802 that "there certainly are more oats in this County than all other grains put together"³⁸ was true throughout the first half of the 19th century.

31 N.C., March 28th 1772. 32 N.C., Nov. 9th 1771, Feb. 13th 1773, April 2nd 1774

33 N.C., Oct. 2nd 1790, June 25th 1803.

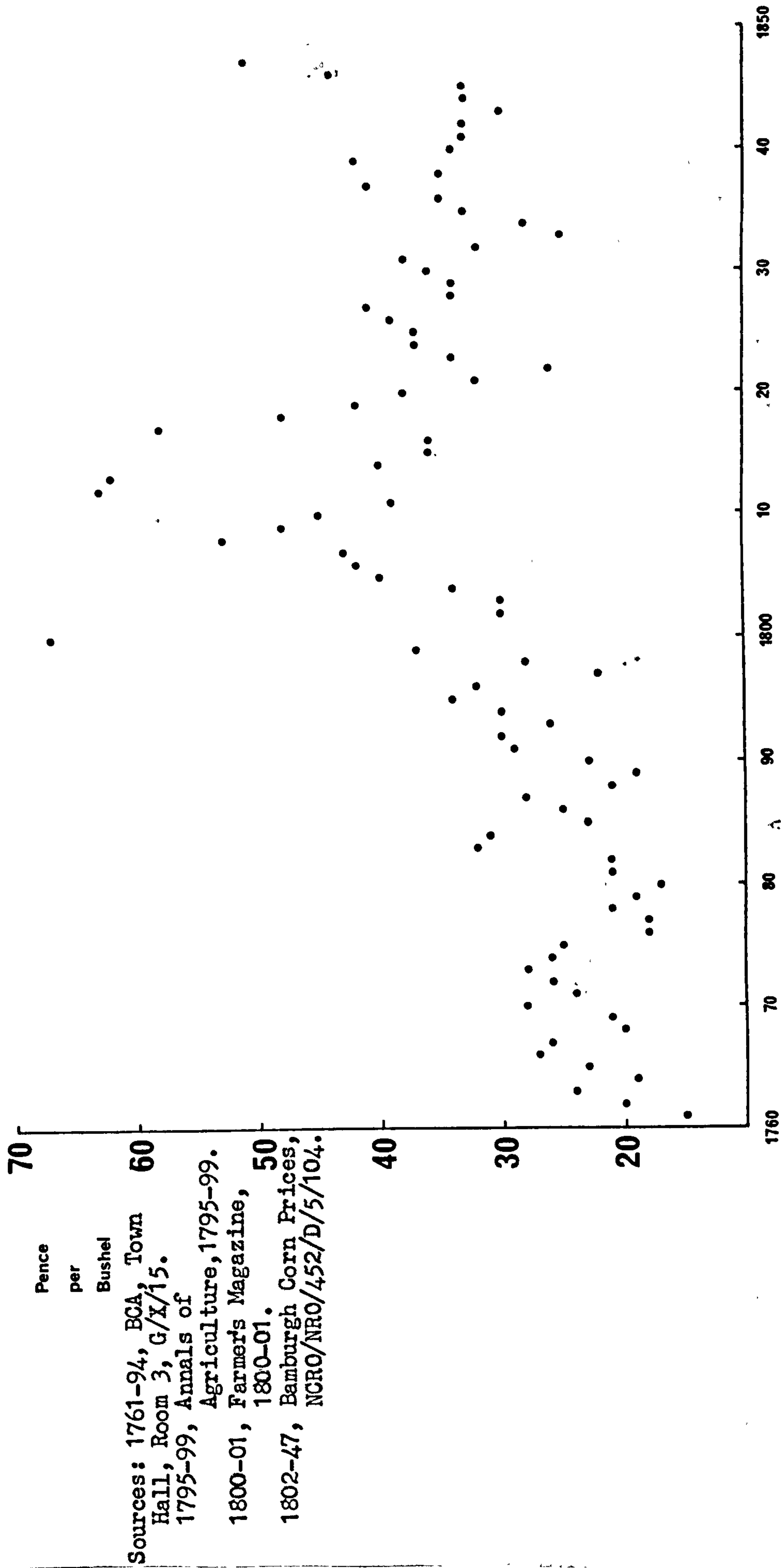
34 N.C., Feb. 21st 1835. 35 David Thomas, op.cit., p.63.

36 Bailey and Culley, 1805, p.85.

37 George Culley to John Welch, June 4th 1802. NCRO/ZCU/6.

38 Ibid., March 30th 1802. NCRO/ZCU/6.

Figure 15:9
Northumberland Oat Prices
(average monthly prices)



Sources: 1761-94, BCA, Town
Hall, Room 3, G/X/15.
1795-99, Annals of
Agriculture, 1795-99.
1800-01, Farmer's Magazine, 50
1802-47, Bamburgh Corn Prices,
NCRO/NRO/452/D/5/104.

Map 15:5 shows the dominant position of oats all over the County in 1801, slightly less dense in the very northern portion. By 1867, although oats were still very much the most important grain, their distribution had changed. Map 15:6 shows farmers in the northern tip of the County to have become significantly less interested in oats. Highland areas were still devoting large percentages of their arable acreages to oats, but central Northumberland, an area of poor thin soils and highly marginal arable land, was devoting the greatest proportion of arable acreage to this most exhausting of grain crops (see p. 231). In such positions, oats stood a greater chance of growing and of being harvested than did wheat or barley.³⁹ Table 15:2 shows the dominant position of oats at mid-century, certainly in the highland areas, but even more on the marginal land in the middle of the County. Table 15:4 reveals a decline in total oat acreage between 1803 and 1867 with the largest part of that decline being experienced in Tindale.

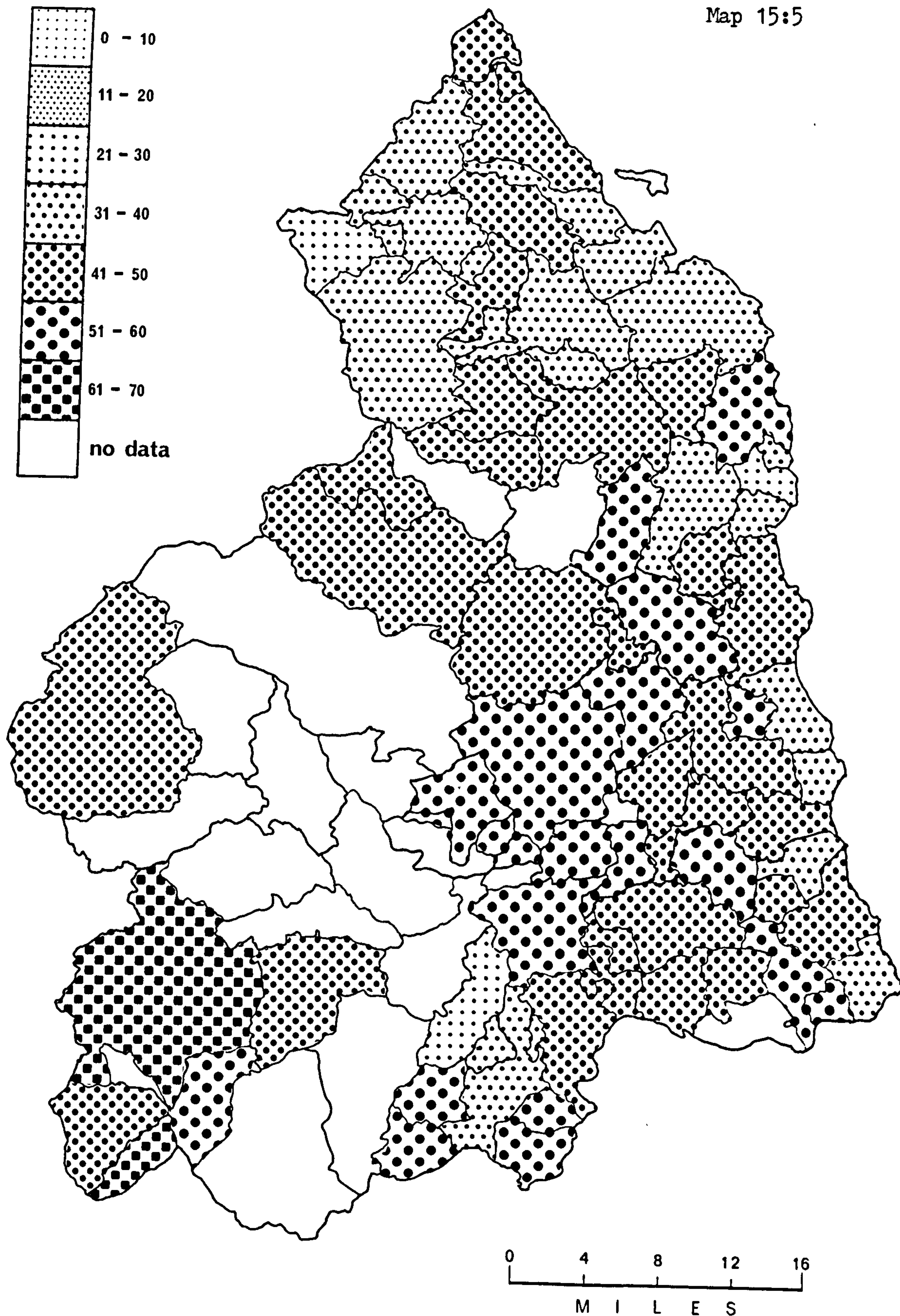
There seem to have been a great many types of oats in use in Northumberland, new sorts often being rapidly followed by still newer ones. Bailey and Culley mentioned the Poland Oat as being common at the end of the 18th century, particularly a variety known as the Church Oat, brought out of Scotland by one of Culley's students and which had apparently replaced the Dutch, Friezeland or Holland Oats.⁴⁰ Newspaper advertisements indicate that the introduction of the Church Oat had not meant the end of Dutch Oats as Culley had suggested, for many shipments of Dutch, Prussian and Poland Oats were offered for sale between 1783 and 1800.⁴¹ Tartarian Oats had apparently been introduced in the 1770s, but had been given up on all but the "midland parts of the county" by 1805,⁴² being exceptionally hardy and able to succeed on cold lands.

39 Seymour Bell, op.cit., NCL/L630. 40 Bailey and Culley, 1805, pp.82-3.

41 e.g. N.C., April 5th, July 19th 1783, March 28th 1789, Sept.17th 1791, March 11th 1797, March 15th 1800.

42 Bailey and Culley, 1805, p.84.

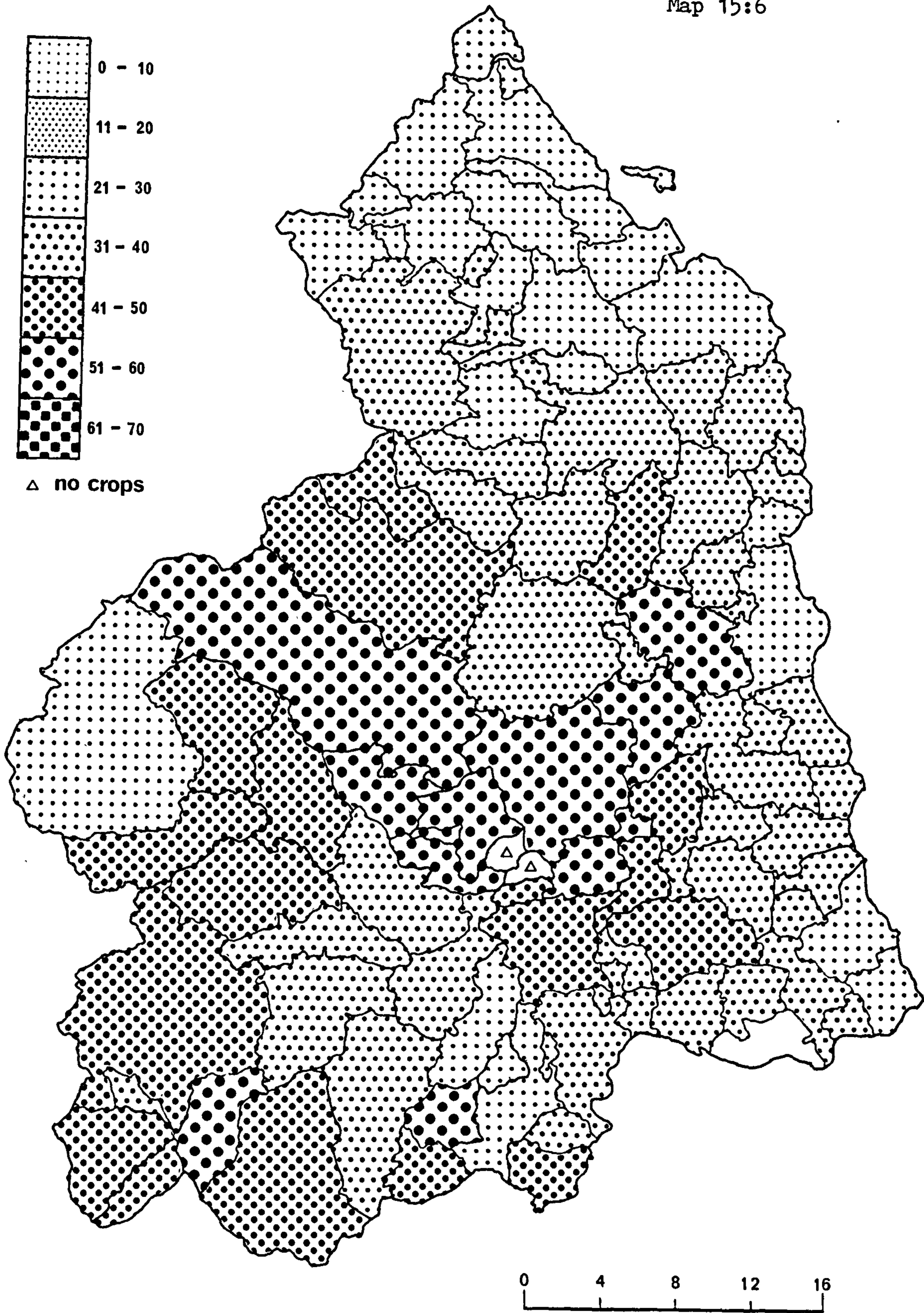
Map 15:5



Oat Acreage as Percentage of Total Crop Acreage
by Parish, 1801.

Sources: 1801 Crop Returns, PRO/HO/67/8.
(Figures for Ulgham, Kirkhaugh and Whitfield Parishes, 1803,
in John Hodgson, History of Northumberland, 1832, 2(2),
p.370; 2(3), pp. 58, 97.)

Map 15:6



Oat Acreage as Percentage of Total Crop Acreage
by Parish, 1867.

Source: 1867 Agricultural Census,
PRO/MAF/68/139.

These were first mentioned in the newspapers in 1780.⁴³ The Angus Oat was introduced to the County at the end of the century⁴⁴ and first advertised shipments were to Alnmouth in 1799⁴⁵ and Newcastle in 1809.⁴⁶ And so the process went on. The Potato Oat, probably coming from Cumberland in 1789,⁴⁷ and the Dutch Oats were in turn threatened by the Newton Oat by 1822, advertised as having the qualities farmers seem to have sought in all these types, "growing on poorer Soils, and particularly adapted to high Situations, being the earliest Oat grown, and not easily dashed with the Wind" as well as being exceptionally productive.⁴⁸

Rye

Rye is unexacting in its soil requirements provided there is adequate drainage. It has a short growing season and can survive hard winters and low levels of soil fertility.⁴⁹ By the end of the 18th century it was cultivated only on very sandy soils unsuited to any other crop, though it had been the chief grain grown on lighter soils in Northumberland in the mid-18th century.⁵⁰ The use of lime to consolidate such land had allowed its replacement with more profitable grains, and even wheat after turnips.⁵¹ Cultivation of rye had apparently also declined drastically at the same time in areas contiguous to the County.⁵² Lord Eden, the Chairman of Durham magistrates, wrote to the Duke of Portland in 1795, "I am sorry to observe that the Cultivation of Rye in this County has in late Years much decreas'd, but the lower People reject it".⁵³ The whole of Northumberland produced only 2,414 quarters of rye in 1795,⁵⁴ grew only 1,545 acres in 1801⁵⁵ and 1,482

43 N.C., April 15th 1780.

44 Bailey and Culley, 1805, p.84.

45 N.C., April 21st 1799.

46 N.C., March 18th 1809.

47 Bailey and Culley, 1805, p.83.

48 N.C., Feb. 2nd 1822. See also W. Whellan, History, Topography and Directory of Northumberland, 1855, p.113.

49 David Thomas, op.cit, p.69

50 Bailey and Culley, 1805, p.79.

51 Ibid.

52 A.A., 24, 1795, pp.100, 103.

53 PRO/HO/42/37/102

54 PRO/HO/42/37/119.

55 PRO/HO/67/8.

acres in 1803.⁵⁶ By 1843 it could be remarked of Northumberland that "Rye has almost ceased to be cultivated in this country".⁵⁷ Indeed, the total County acreage of rye in 1867 was only 251 acres.⁵⁸

Strangely enough, while the majority of the Northumberland population survived on a diet of barley and oats, the people of Tyneside and Newcastle in particular ate rye bread, a habit presumably acquired while the rest of the County had a similar predilection, but retained long after the rest had developed more sensitive palates.(see p. 183).

When native-grown rye was no longer available in the quantities demanded by the urban population, it was imported and it filtered as far into the countryside as Stanhope in County Durham where, in 1801, the surrounding population was "supplied at all times with foreign rye and frequently with other grain, from the Port of Newcastle".⁵⁹ Imported rye, usually from the Baltic, but also from Cambridgeshire, was advertised for sale throughout the last quarter of the 18th century⁶⁰ and at about 6/- or more per boll was at least twice the price of oats. By the 1790s it would seem that the urban population had come to prefer wheat when the price was low enough. John Bryers wrote to Sir John Delaval in 1796 that "there is great quantities of Foreign Rye expected into that port [Newcastle] shortly, more... than can be sold at any price, at least if Wheat keep low or as it now is".⁶¹

Though rye had come to lose all real importance as an individual crop, it is likely that some quantity was sown with wheat in the proportion of 1:3 or 1:2, a mixture known as meslin, maslin or meslingin. Only 2,159 quarters of this mixture were produced in Northumberland in 1795,⁶² but Culley valued it greatly, claiming that it was generally the most successful crop⁶³ and that the grains of both the wheat

56 E. Mackenzie, History of Northumberland, 1825, 1,p.222.

57 N.C.,Nov.3rd 1848. See also J.R.M^CCulloch, op.cit.,1,p.172.

58 PRO/MAF/68/139.

59 Quoted in H.C.K.Henderson,'Agriculture in England and Wales in 1801', Geographical Journal, 118,1952, p.343.

60 e.g.,N.C., April 24th,June 5th 1773, June 21st 1777,May 14th 1785, March 18th 1797.

61 John Bryers to Sir John Delaval, April 23rd 1796,NCRO/2DE/4/22/48.

62 PRO/HO/42/37/119.

63 A.A., 21, 1793, p.227.

and the rye were more perfect than when they were grown singly.⁶⁴ By the 1830s, most people in County Durham apparently ate bread made from meslin,⁶⁵ but it is not known whether this grain was imported, and there is no evidence of meslin being grown in Northumberland at such a late date.

Temporary grasses and Clover

Clover and temporary or cultivated grasses⁶⁶ were essential to the Northumberland agricultural system. Both the Norfolk and what came to be known as the Northumberland rotation were 'alternate' systems of cultivation, but the Northumberland was often flexible enough to incorporate some years of temporary grass and so was not only 'alternate' but also 'convertible'. If, as Culley claimed, it was the combination of stock and crop that made for agricultural prosperity in Northumberland,⁶⁷ then temporary pasture was essential to that prosperity.

It would seem that clover and temporary grasses were in wide use at the beginning of this period and that the sorts of cultivated herbage used, in as much as they can be determined, varied little during the ensuing century. Arthur Young mentioned that clover was being used in Morpeth, Chatton, Wooler and Haltwhistle Parishes in 1769,⁶⁸ though it was definitely not grown in either the Gosforth area or that between Morpeth and Alnwick.⁶⁹ Ideally, land intended to continue for three or more years in grass would be sown with red and white clover, ray grass and perhaps rib-grass or hop-medic.⁷⁰ A pasture intended for only one year, as was often the case in the south of the County, would be sown with the biennial red clover and perhaps some ray grass.⁷¹ How careful

64 Bailey and Culley, 1805, p.80. Vide William Marshall, op.cit., 1, p.76.

65 J.R.M^cCulloch, op.cit., 1, p.175.

66 Vide William Marshall, op.cit., 1, p.88.

67 Bailey and Culley, 1805, pp.185-6.

68 Arthur Young, Northern Tour, 1770, 3, pp.25, 63, 75, 103.

69 Ibid., pp.17, 34.

70 Bailey and Culley, 1805, pp.112-3.

71 Ibid., p.112.

Northumberland farmers were to get the best or even the right kind of seeds may be gauged by a comment of 1811 which asserted that most farmers bought their seeds from hostlers at inns and therefore cultivated little more than fields of weeds. "Amongst the numerous Improvements in Agriculture in this Country", it was said, "it is surprising that so little Attention has been paid to the Introduction of genuine Grasses"⁷². Warranted seed was available from London or Newcastle, but there was apparently little demand for it.⁷³ Local newspapers were full of advertisements for clover and grass seeds of guaranteed quality, some of which came by waggon⁷⁴ or by sea from London,⁷⁵ or direct from Holland⁷⁶ or France.⁷⁷ Culley complained that even reputable seed houses had been guilty of selling sub-standard seed and reported that farmers had taken to growing much of their own seed, particularly for perennial ray grass.⁷⁸

None of the early surveys, either quantitative or descriptive, paid much attention to cultivated grasses. In 1803, there was apparently 69,892 $\frac{1}{2}$ acres of 'meadow' in the County,⁷⁹ but in Northumberland the term 'meadow' has never had a precise meaning.⁸⁰ In the mid-19th century, it was estimated that there were 106,846 acres of new grass and 763,714 of old,⁸¹ but no indication was given of how 'old' grass had to be before it could be given that description. The Agricultural Census of 1867 stated that 85,012 $\frac{1}{2}$ acres were under clover or 'artificial' grasses in that year,⁸² but this figure, in virtual isolation from inadequate preceding statistics, is not terribly useful. It can only be assumed that the cultivation of clover and temporary

72 N.C., April 13th 1811.

73 Ibid.

74 N.C., April 11th 1807

75 N.C., March 21st 1795.

76 e.g., N.C., March 10th 1759, April 21st 1770, March 22nd 1788, March 1st 1796, April 16th 1796, March 18th 1797.

77 N.C., March 19th 1808.

78 Bailey and Culley, 1805, pp. 115-6

79 AC/Y/4/2/b/5

80 William Marshall, op.cit., 1, p. 89.

81 NCRO/ZHE/34/1.

82 PRO/MAF/68/139.

grasses went hand in hand with the extension of the length of rotations, in response to a situation in which there was both increasing arable acreage and increasing stock numbers during the period from 1750 to 1850 (see pp.233-4). Edward Hughes found some evidence that Northumberland farmers had been reluctant to use clover in 1748,⁸³ but by the 19th century, so much was being grown that some areas, as at Belsay, were beginning to suffer from clover sickness as a result of the too frequent repetition of clover crops.⁸⁴ Important as clover and temporary grasses were in Northumberland agriculture, it is not possible to trace their diffusion in greater detail.

Peas and Beans

Although peas are a hardy crop able to stand low temperature, they need dry weather as they approach maturity and are best adapted to light, well-drained soils. Beans, on the other hand, are very sensitive to temperature extremes, require large amounts of moisture and are best suited to heavy soils.⁸⁵ The 1801 Crop Returns show peas and beans to have been sown together in at least 11 parishes, all, with the exception of Morpeth, in the north of the County.⁸⁶ The same Returns show no parish to have devoted more than 10 per cent of its total crop acreage to beans and peas and most grew no more than a few acres of either crop. Not surprisingly, peas were more common on the lighter soils of the north and beans on the heavier soils of the coast and the south-east.⁸⁷ Both crops were among the earliest to be drilled, though their broadcast sowing lasted long after the advantages of drilling were known.⁸⁸

Bean and pea acreage for the whole County in 1803 was given as 5,786 acres,⁸⁹ estimated, probably rather generously, to have been 15,500 acres about mid-century⁹⁰ and listed as 9,954 acres in 1867.⁹¹

83 E. Hughes, *North Country Life in the 18th Century*, 1952, p.143.

84 NCRO/ZMI/B41/4

85 David Thomas, *op.cit.*, pp.72-4.

86 PRO/HO/67/8

87 A.A., 14, 1790, p.474; 21, 1793, p.225.

88 Bailey and Culley, 1805, pp.86, 90.

89 AC/Y/4/2/b/5; PRO/HO/67/8. 90. NCRO/ZHE/34/1.

91 PRO/MAF/68/139.

Maps 15:7 and 15:8 show the relative importance of both crops in 1867 and emphasise the much greater importance of the bean in the east and of peas in the south-east. Table 15:5 suggests that the greatest increase in both crops took place in the south, in Tindale, Morpeth and Castle Wards, where either could be sown in drills and used instead of turnips as a profitable substitute for bare fallow on heavy lands,⁹² or as an occasional substitute for clover to avoid clover-sickness.⁹³

Table 15:5

Acreages by Ward of Beans and Peas, Rye and Potatoes,
1803 and 1867

	BEANS AND PEAS		R Y E		POTATOES	
	<u>1803</u>	<u>1867</u>	<u>1803</u>	<u>1867</u>	<u>1803</u>	<u>1867</u>
Bamburgh	975	1077	32	9	277	521
Morpeth	811	2177	111	39	468	441
Castle	451	2173	75	23	560	528
Glendale	883	630	449	73	315	627
Coquetdale	727	1105	134	31	415	553
Tindale	758	1465	681	76	1969	1052
Berwick	48	122	0	0	189	365
TOTAL	4653	8736*	1482	251*	4193	4077*

* Adjusted to pre-1844 boundaries.

Sources: 1803 - E.M^CKenzie, History of Northumberland, 1, 1825, p.222.

1867 - PRO/MAF/68/139.

Peas cultivated in Northumberland were described as the early and late grey peas, and beans were either the horse bean or the mazagan,⁹⁴ Both crops produced exceptionally variable yields,⁹⁵ but the main problem with the bean was that it was generally not ready to be harvested until October, very late for a following crop of autumn wheat. While the mazagan was ready in September,⁹⁶ Culley doubted whether it yielded

92 Bailey and Culley, 1805, p.88

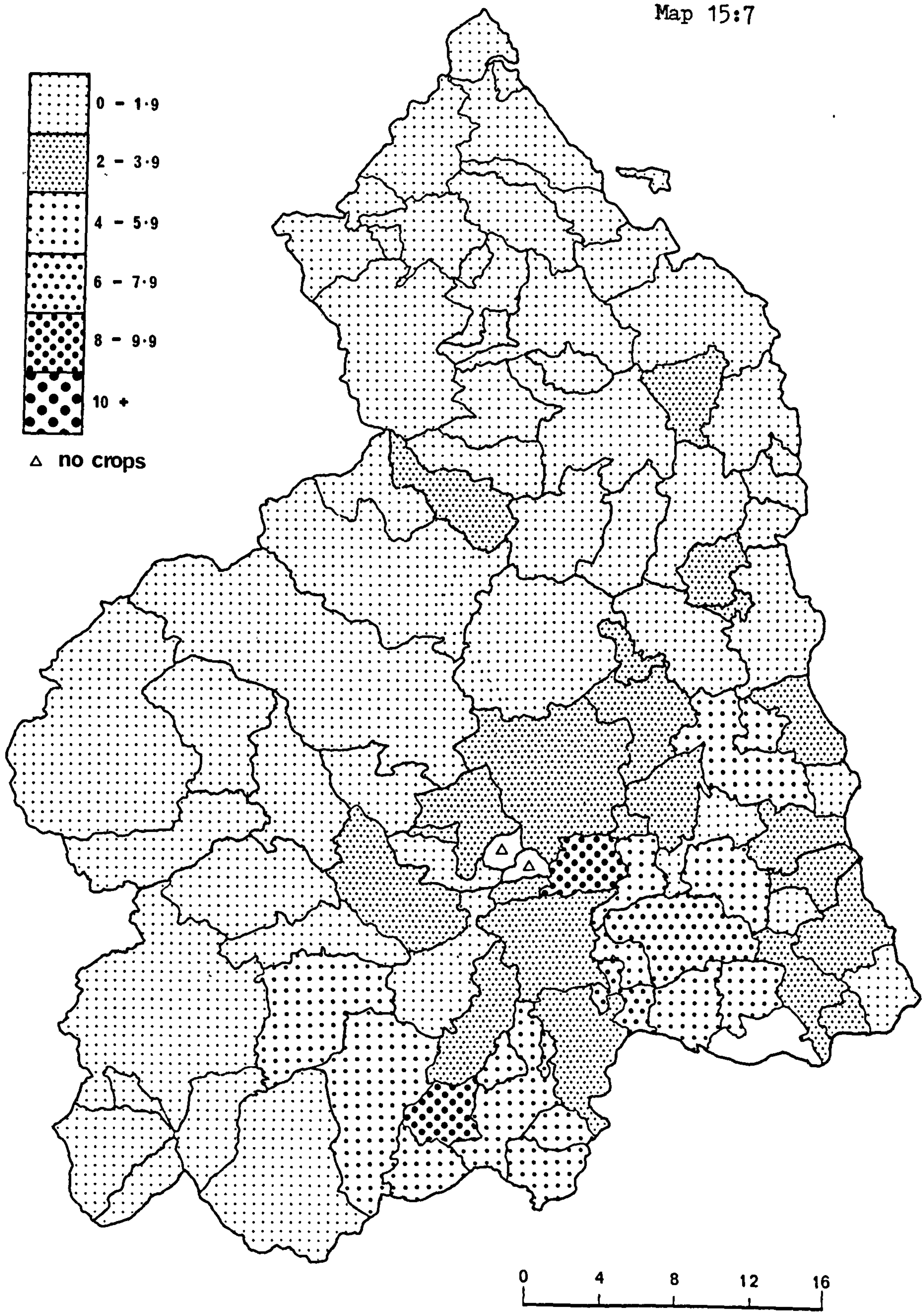
93 NCRO/ZMI/B41/7.

94 Bailey and Culley, 1805, pp.86,90.

95 Seymour Bell, op.cit., NCL/L630.

96 N.C., Feb.18th 1815.

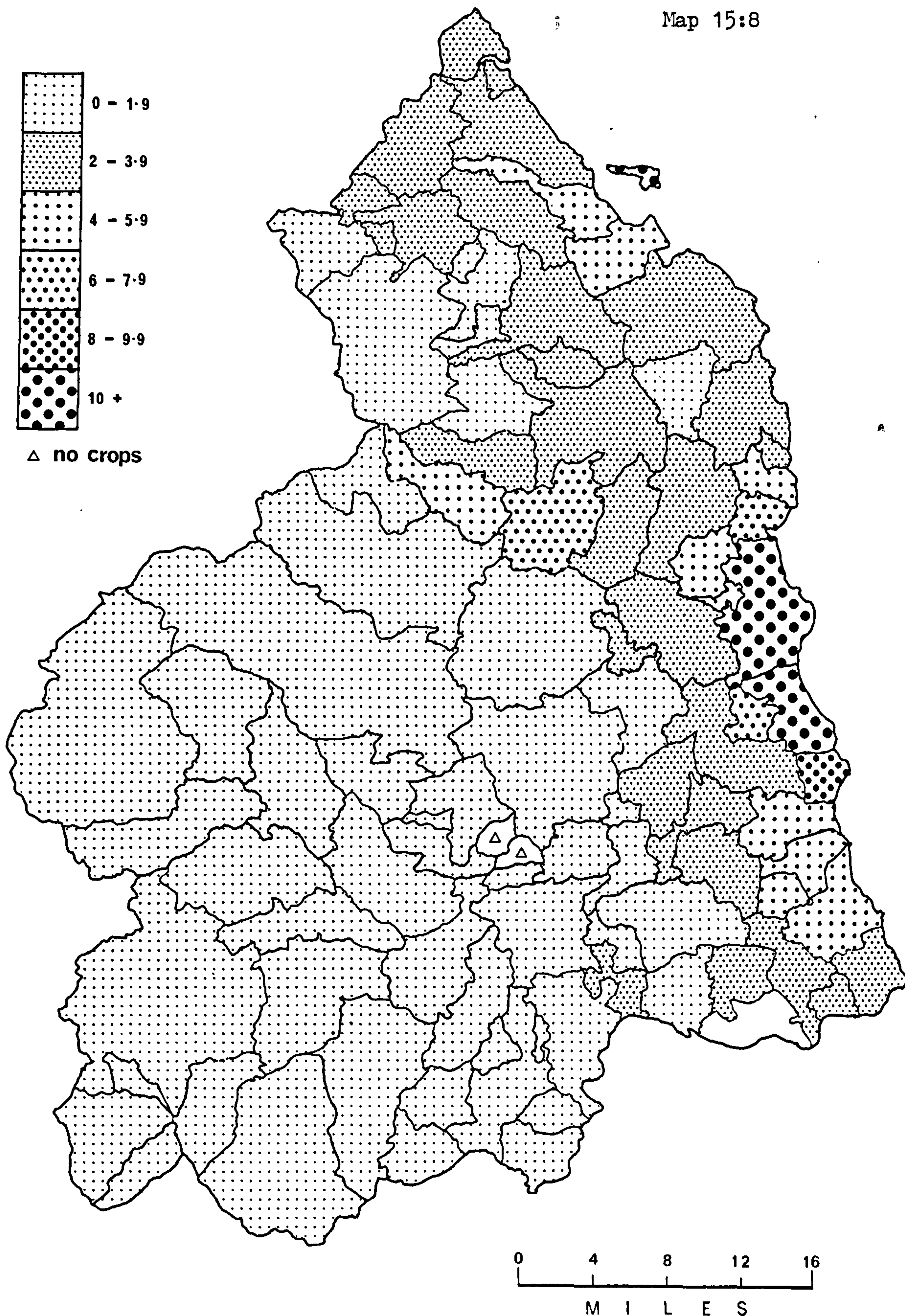
Map 15:7



Pea Acreage as Percentage of Total Crop Acreage
by Parish, 1867.

Source: PRO/MAF/68/139.

Map 15:8



Bean Acreage as Percentage of Total Crop Acreage
by Parish, 1867.

Source: PRO/MAF/68/139.

as well as the horse bean.⁹⁷ Other varieties of beans or peas for seed were offered for sale very rarely,⁹⁸ though a winter bean, ready in July, appeared in 1829.⁹⁹ This contrasts markedly with the availability of many new types of wheat and oats and suggests a very much smaller interest in the improvement of the cultivation of beans and peas.

Tares

Both spring and winter tares were grown as green food for horses, but only in minute quantities.¹⁰⁰ New seed seems to have come exclusively from Norfolk.¹⁰¹

Rape

Rape was sometimes grown as spring fodder for sheep and very occasionally for seed.¹⁰² Pleas from the Urpeth Oil Mill for local supplies of seed in the 1780s,¹⁰³ ceased shortly after and the mill seems to have imported its requirements after this date.

Cabbages

Cabbages were occasionally grown and were dibbled in rows.¹⁰⁴ They provided extra fodder for animals and were particularly useful for promoting milk production in cows, it being claimed that they did not taint the milk as much as turnips did. The field culture of cabbages was said to have spread from East Anglia to Northumberland about 1780,¹⁰⁵ but a champion ox in Berwick had spent the whole winter of 1775-6 on cabbages.¹⁰⁶ The Delaval estates in Earsdon seem to have taken an early interest in cabbages, 26,500 plants being grown on the South Farm there in 1783, and experiments were also conducted at Seaton Delaval with buckwheat and carrots for fattening and dairy purposes.¹⁰⁷

97 Bailey and Culley, 1805, p.89.

98 e.g., March 15th 1800, N.C.

99 N.C., Sept.19th 1829.

100 Bailey and Culley, 1805, p.90.

101 N.C., Aug.17th 1805, March 11th 1815, Feb.3rd 1821.

102 Bailey and Culley, 1805, p.108.

103 e.g. N.C., Aug.23rd 1788.

104 Bailey and Culley, 1805, p.108.

105 N.C., June 9th 1787.

106 N.C., March 30th 1776.

107 John Bryers to Sir John Delaval, June 5th 1783. NCRO/2DE/4/20.

Potatoes

Potatoes were grown as field crops as food for stock, especially horses, and most hinds had 2,000 or so yards of potatoes planted for them as part of their wages in kind. Many of the 1801 Crop Returns mention that the only potatoes grown in the parishes were those in the plots used by the labourers. Table 15:5 shows the County to have had a small and stable potato acreage between 1803 and 1867. Berwick specialised in the growing and export of seed potatoes¹⁰⁸ and they were a normal part of the diet of the citizens there when wheat was expensive.¹⁰⁹ In 1796, 780 acres were planted in the parish,¹¹⁰ but this had contracted to 186 acres in 1801¹¹¹ and to 189 acres in 1803.¹¹² They were often recommended as a cheap food for the poor in times of scarcity,¹¹³ But Cobbett was pleased to note in 1832 that in Northumberland "you see scarcely any potatoes; a certain sign that the working people do not live like hogs".¹¹⁴

Some north Northumberland farmers seen to have been eager to use potatoes for horse fodder in the early Spring,¹¹⁵ and a method of baking potatoes in kilns for horses was peculiar to the County in the 1780s.¹¹⁶ Seed potatoes were imported from Lincolnshire¹¹⁷ and from Fife,¹¹⁸ but blight in the 1840s as well as the heavy labour and manure costs involved may have limited their cultivation to plots and gardens and to land near larger towns. Only on the Tweed and in Bamburghshire were they sometimes grown for sale or farm use in the mid-19th century.¹¹⁹

108 N.C., March 15th 1806.

109 A.A., 24, 1795, p.101.

110 John Fuller, History of Berwick, 1799, p.459.

111 PRO/HO/67/8

112 AC/Y/4/2/b/5.

113 N.C., March 20th 1773; Sir Frederick Morton, The State of the Poor, 1797, p.103.

114 William Cobbett, Rural Rides, 1832, Pitt Cobbett ed., 1893, 2, p.379

115 A.A., 21, 1793, p.226; George Culley to John Welch, Feb.11th 1800. NCRO/ZCU/6.

116 A.A., 1, 1784, p.283.

117 N.C., April 14th 1798.

118 N.C., May 14th 1808.

119 Seymour Bell, op.cit., NCL/L630.

Turnips

Though it has been said that the introduction of turnip husbandry was not an unmitigated benefit to agriculture because it encouraged over-reliance on one crop,¹²⁰ the impact the turnip had on Northumberland agriculture can scarcely be over-emphasised. It was said of Northumberland in 1855 that "In no part of England, perhaps, had the introduction and cultivation of turnips added in an equal degree to the produce of the land as in this".¹²¹ Thomas Colbeck also attributed the improvement of the County's agriculture to the turnip in that it had been the turnip which had made possible increased stock numbers, less grassland and more tillage.¹²² By the 19th century, Northumberland rivalled Norfolk as a centre of turnip cultivation,¹²³ and visitors marvelled at both the extent of the crop and the mass-production, precision methods by which it was sown and tended.¹²⁴ Indeed, it was said to be the intensive and uncompromising labour demand of the turnip culture that was the sole reason for the retention of the bondage system in the north of the County¹²⁵ (see p.188).

The turnip seems to have been cultivated as a field crop in Northumberland early in the 18th century, despite an assertion in 1846 that its initial use was "within the memory of living man".¹²⁶ Bailey and Culley stated that one Andrew Willey had been employed by farmers in the 1720s, first at Rock and later at Lesbury, to sow turnips for cattle and that so great was the demand that the work had to be done from horseback.¹²⁷ As Willey had previously been a gardener, this provides an interesting example of the transition from garden to field culture. Other evidence states that 8 acres of broadcast turnips were being grown at Reavely Greens, near Brandon, in 1721 and others at West

120 E.L.Jones, *Seasons and Prices*, 1964, p.94.

121 W.Whellan, *op.cit.*, p.113.

122 Thomas Colbeck, p.437.

123 F.M., 10, 1809, p.29

124 Walter White, *Northumberland and the Border*, 1859, p.213.

125 Seymour Bell, *op.cit.*, CL/L630

126 Mr. Anderson to Newcastle Farmers' Club, July 4th 1846, L.& P. Bolbec N630.6/1.

127 Bailey and Culley, 1805, p.92.

Chevington in 1722.¹²⁸ By the 1760s, turnips were well established in the north of the County, not so much as a fallow crop, but to break in new land.¹²⁹ The hardy keeping properties of the small, broadcast turnips, known as burnt land turnips and taken after paring and burning new ground, meant that this rather primitive system of cultivation was perpetuated well into the 19th century and long after the general adoption of turnip drilling in north Northumberland.¹³⁰ It was even suggested in 1775 that turnips be sown in August that they could sprout herbage in the following April and May, a method which had apparently proved successful near Newcastle in 1762.¹³¹

If stock was to be wintered, then fodder had to be provided during the period from when the grass stopped growing in the early winter to when it started growing again in late May or June. Hay, straw and meal could provide sustenance, but not for any quantity of animals for the whole period. Hence the value of turnips, a crop that could be either led off and fed or stored or fed on during the winter and early spring. Yet appreciation of the value of this new food was not quite unanimous. The Northumberland naturalist, John Wallis, wrote in 1769, "It is surprising that turnip-husbandry should be so much in fashion, which spoils the dairy, and the shambles, sends such gross-flavoured milk, cream, and butter, beef and mutton, to our tables. It is well enough for a Succedaneum in the cold winter-months, or in unfavourable summers for grass, but to give it so much of our care and attention, to the neglect of other cultures, the cherishing of natural herbage, can be nothing but the effect of avarice or sloth".¹³²

The difficulties faced by farmers in wintering stock without turnips are perhaps best represented in advice of 1776 to feed cattle on hay tea

128 Notes by J.R. Wood, NCRO/NRO/302/75.

129 Daniel Defoe, *A Tour Through Great Britain*, 1769, 3, p.254.

130 A.A., 21, 1793, p.228; 24, 1795, pp.104-5; George Culley to Sir John Sinclair, Jan. 1801, NCRO/ZCU/2; George Culley to John Welch, Oct.9th 1802, NCRO/ZCU/6; Robert Kerr to Walter Trevelyan, March 16th 1809, NCRO/ZTR/23/5.

131 N.C., July 8th 1775.

132 John Wallis, *The Natural History and Antiquities of Northumberland*, 1769, 1, p.32.

"that is a handful of hay, boiled in about a pail of water".¹³³ Figure 15:10 is compiled from the tolls on sheep and cattle taken at Morpeth Market. At no period between 1756 and 1772 was much stock sold in January, February or March, a period when they could not be fat. By June or July, they had had time to fatten on pasture and were ready for sale. What is more interesting is that the November peak, very evident in the period 1756-61 but less so in that from 1762 to 1767 and the result of farmers selling their stock before the winter shortages set in, had almost disappeared in the period from 1768 to 1772. It is presumed that this was largely the result of the spread of turnips offering the reasonably secure promise of winter feed.

Turnips require a moist summer and thrive best on light soils.¹³⁴ Consequently, their cultivation was earliest practiced and most general on the light soils in the north of the County, especially those of Glendale Ward. By 1780, turnips were not only grown extensively in the north, but were being sold by the field to feed on for sheep or off for cattle.¹³⁵ But they were also being grown on the more difficult heavy soils of the south-east where they were used to fatten sheep and oxen from the west and north,¹³⁶ to winter dairy cattle,¹³⁷ or to let to butchers.¹³⁸ Yet turnip cultivation had not spread to the Hexham area by 1794¹³⁹ and was described as "but lately introduced" there in 1811.¹⁴⁰

The relative importance of turnip cultivation in 1801, depicted on Map 15:9, shows how much greater was the role they played in the

133 N.C., Dec.7th 1776

134 David Thomas, op.cit., pp.74-5.

135 New West Farm, Berwick, N.C., Dec.9th 1780.

136 John Bryers to Sir John Delaval, April 9th 1780, NCRO/2DE/4/19; Bowlers Green, Morpeth, N.C., Jan.28th 1786.

137 John Bryers to Sir John Delaval, Jan.3rd 1783. NCRO/2DE/4/20/31.

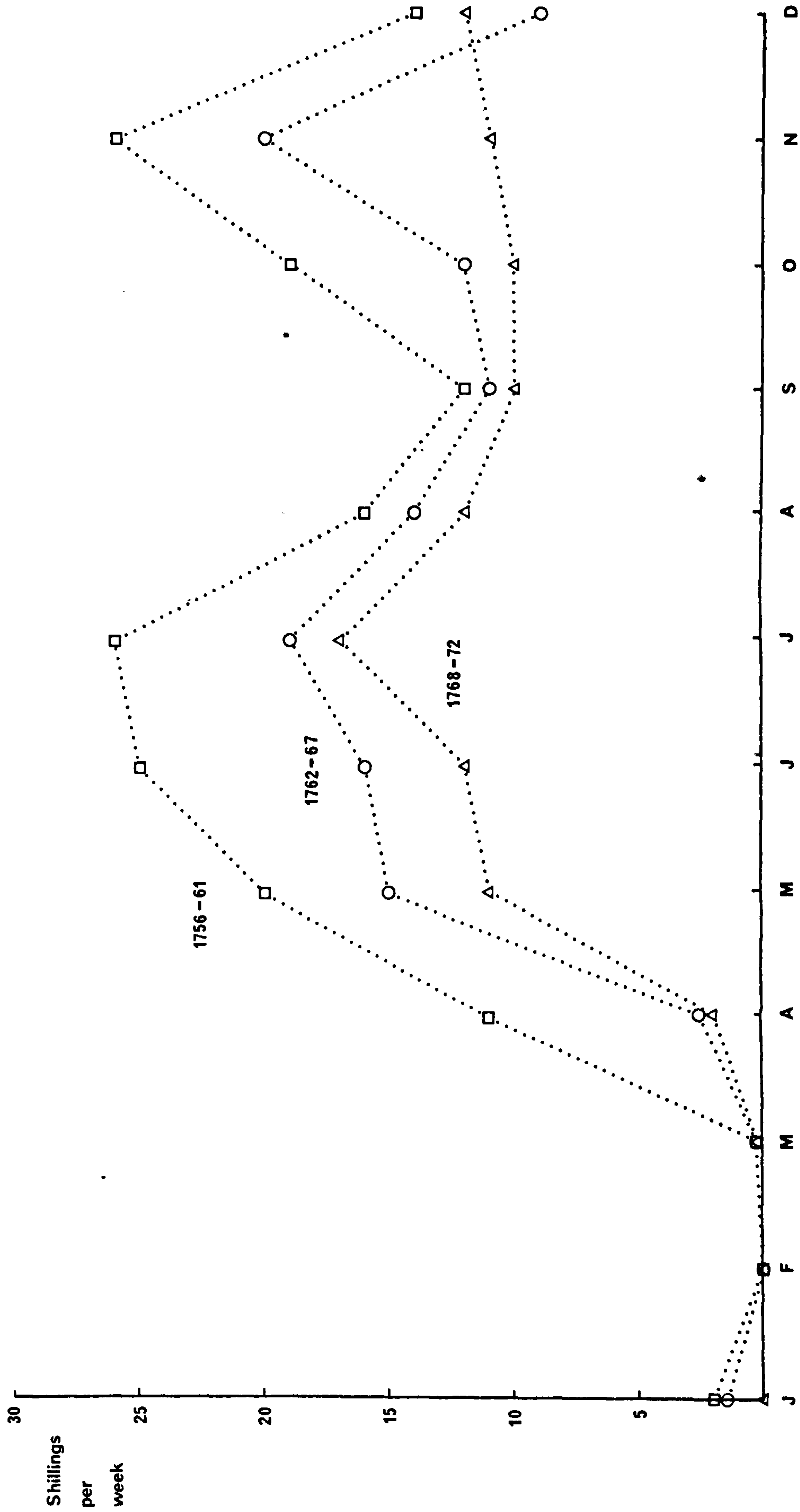
138 William Noble to Sir John Delaval, Nov.18th 1781. NCRO/2DE/4/47/3.

139 Bailey and Culley, 1794, pp.36-7.

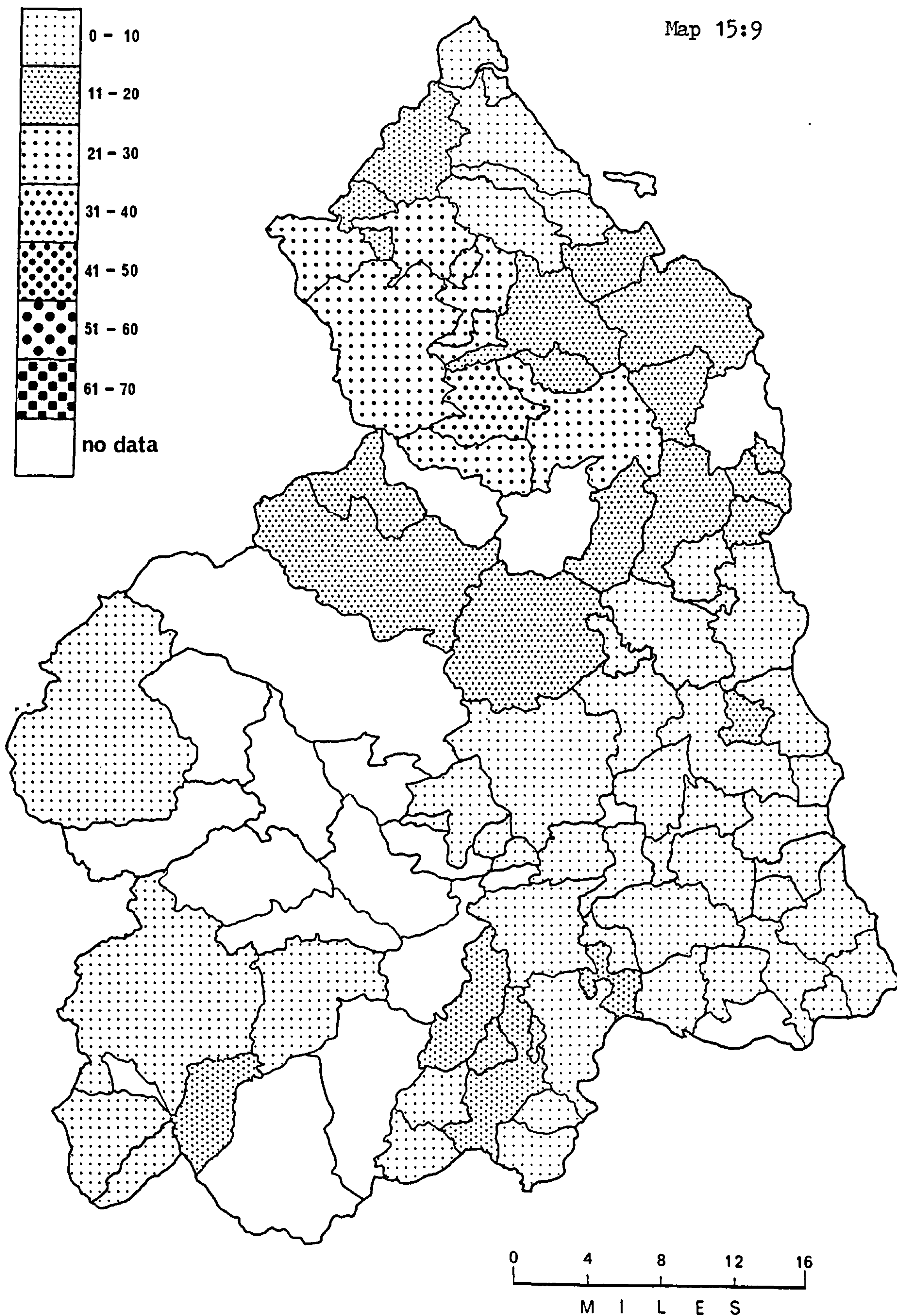
140 E.Mackenzie, History of Northumberland, 1811, 1, p.187.

Figure 15:10

Average Weekly Tolls on Sheep and Cattle Collected at Morpeth Bridge,
1756-1772



Source: P & D, Howard of Naworth, N3/1



Turnip Acreage as Percentage of Total Crop Acreage
by Parish, 1801.

Sources: 1801 Crop Returns, PRO/HO/67/8.
(Figures for Ulgham, Kirkhaugh and Whitfield
Parishes in John Hodgson, History of
Northumberland, 1832, 2(2), p.370; 2(3), pp.58,
97.)

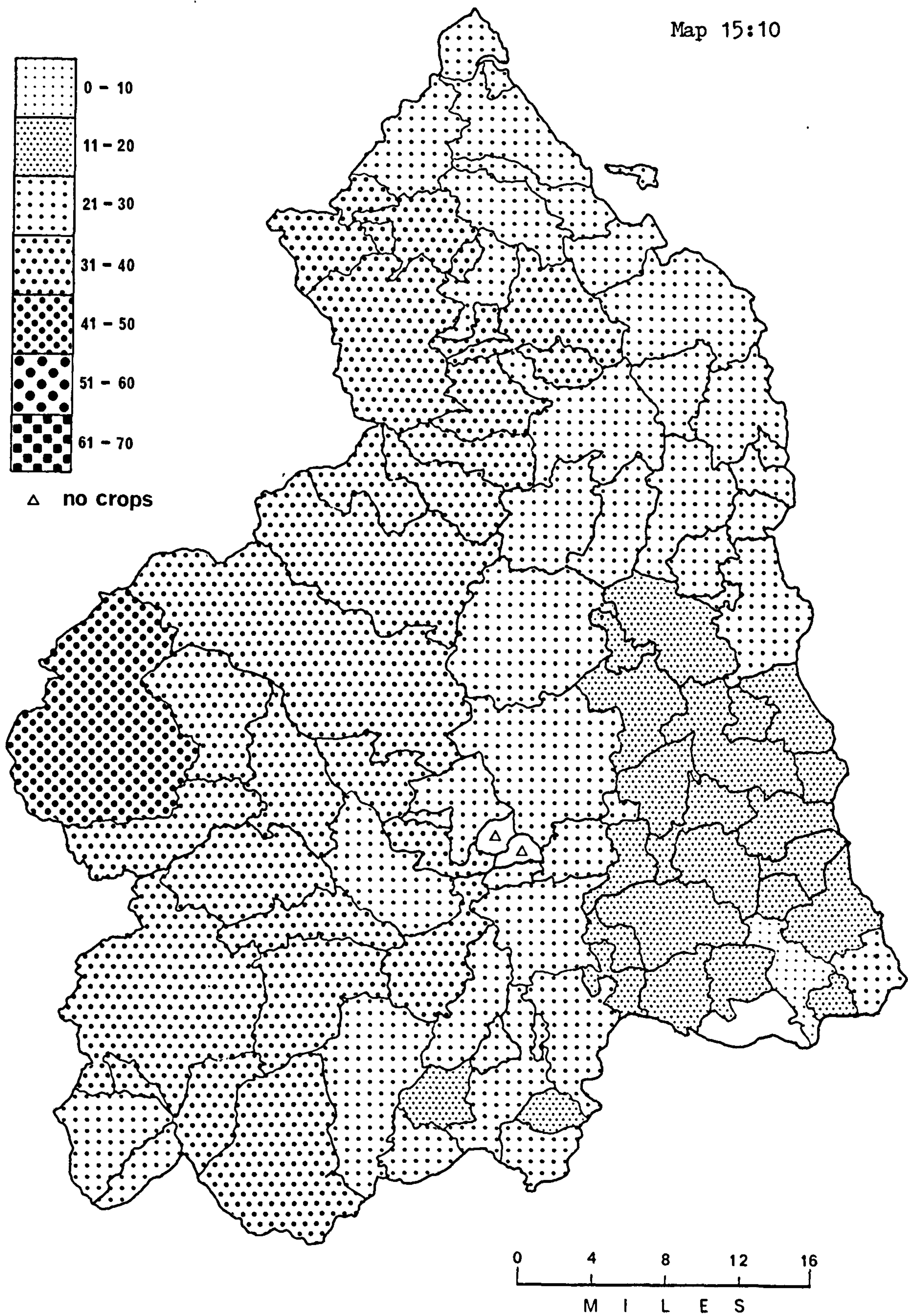
agriculture of Glendale than anywhere else in the County, particularly the south, where turnips were obviously of much less importance. The situation had changed significantly by 1867 as is revealed by Map 15:10. The south-east was still the area in which turnips were of least importance, but even there they had increased their proportional acreage. Moreover, what appears is a declining relative importance of turnips from the high ground in the west to the coastal plain in the east. This does not, of course, mean that the small arable acreages of highland parishes were growing absolutely more turnips than lowland parishes - Table 15:2 makes it quite clear that turnips were still more important in the north of the County than in any other part at mid-century - but it does mean that highland arable that had been used in the 18th century to produce subsistence grain, was used in the 19th century to produce food for animals. In 1845, for example, it was said of Birtley High Division, Chollerton, that "the Land is more plough'd for the purpose of getting a few Turnips than for any Consideration as to Corn of any Kind".¹⁴¹ It may also mean that new land was still being broken up with turnips at this date. In 1806, fell land near Hexham worth £1 per acre produced turnips to the value of 12 guineas an acre,¹⁴² and by 1850 moor farms were becoming difficult to let if they did not possess at least a small appendage of turnip land.¹⁴³ Table 15:3 shows the advance in importance of turnips as against the other main crops on the County scale. Between 1803 and mid-century they doubled their acreage and had increased their share of the County crop acreage some 64% by 1867.

141 Tithe File for Birtley High Division, Chollerton, June 12th 1845, PRO(A)/IR/18/6826. See also Tithe Files for Birtley Low Division (6827) and for Hartside, Ingram(7022).

142 N.C., Nov.29th 1806.

143 Sir Walter Riddell to George Tate, Nov.18th 1850.NCRO/ZRW/337.

Map 15:10



Turnip Acreage as Percentage of Total Crop Acreage
by Parish, 1867.

Source: 1867 Agricultural Census, PRO/MAF/68/139.

Of vital importance in the spreading popularity of the turnip was the fact that it could be used on light soils - those on which it grew best - as a fallow crop, much more profitable than the naked fallows it replaced. The rapid diffusion of the drilling technique in the north, essential for the cleaning of the land during the growth of the turnip crop, will be considered later (see pp. 410-18), but the practice was probably very general in the north of the County by the 1790s.¹⁴⁴ Turnips were certainly being used as a fallow crop in Bamburgh by 1774.¹⁴⁵ In highland areas, short-term and relatively cheap arable land hardly required complicated rotations,¹⁴⁶ but the heavier lands of central and south-east Northumberland were faced with a problem. It was difficult to grow turnips on such soils anyway and, having grown them, it was impossible to eat them on. Hence they had to be harvested - an expensive process - before they could be fed to stock and it was never possible to introduce the system of eating half on and half off which Culley described in 1802 as a new method of feeding sheep.¹⁴⁷ Moreover, on heavy lands, farmers relied on wheat to pay the rent and wheat yields could not be expected to be good when the grain was planted late on probably poached, ill-prepared and weedy ground. Yet so popular and profitable had turnips become by the mid-19th century that farmers on heavy land who still prepared for wheat with a bare fallow were looked upon as backward.¹⁴⁸ In 1847 it was proclaimed that "All descriptions of soil are now made to grow turnips; and they have become so necessary to the raising of dung, and rearing and feeding of cattle and sheep,

144 A.A., 14, 1790, pp.183,473; 15, 1791, p.628; 20, 1793, pp.162-6.

145 Mark Hughes, *Lead, Land, and Coal as Sources of Landlord Income in Northumberland between 1700 and 1850*, Ph.D.Thesis, Durham University, 1963, p.206.

146 cf. Yorkshire, J.R.M^CCulloch, op.cit.,1,p.175.

147 George Culley to John Welch, Oct.8th 1802. NCRO/ZCU/6.

148 Seymour Bell, op.cit., NCL/L630.

that really no one now scarcely knows how to carry on his agricultural operations without them".¹⁴⁹ In fact, by mid-century, increased use of more powerful manures, such as guano, made turnips more likely if more expensive to grow. Drainage operations also removed excess moisture from the soil and allowed the cultivation of turnips on lands that would otherwise have been unfit for them. In Cumberland, where turnip culture did not become general until about 1830, its diffusion was declared to have gone "hand in hand with tile-draining"¹⁵⁰ (see p.364). Yet, despite the advance of turnip cultivation on heavy soils, fallow crops on most wheat soils in Northumberland were the exception rather than the rule,¹⁵¹ and where turnips were grown, it was on patches of lighter soil during favourable seasons rather than as a normal part of the rotation.

Difficulty in obtaining good turnip seed and probably over-reliance on the turnip for fodder induced some Northumberland farmers to grow their own seed. George Culley made this quite a profitable side-line,¹⁵² and sold what he boasted was the dearest turnip seed in the country¹⁵³ to an exceptionally thirsty market.¹⁵⁴ The difficulty getting good seed may have been considerable if the activities of Sir John Delaval in the 1780s were typical. He sold seed made from only those turnips which were too thin and weakly to be profitable in any other way.¹⁵⁵ Turnip seed was readily available from seed merchants, and was described as early as 1751 as "Red and Green Turnip Seed for the Fields"¹⁵⁶ and usually from Norfolk.¹⁵⁷ In the 1790s,

149 Mr. Ramsey to Newcastle Farmers' Club, March 6th 1847. L. & P., Bolbec N630.6/1.

150 William Dickinson, 'On the Farming of Cumberland', J.R.A.S.E., 13, 1852, p.228.

151 William Glover to Newcastle Farmers' Club, Nov.3rd 1849. L. & P., Bolbec N630.6/2.

152 D.J. Rowe, 'The Culleys, Northumberland Farmers, 1767-1813', Ag.H.R., 19, 1971, pp.156-74.

153 George Culley to ?, Feb.24th 1803. NCRO/ZCU/31.

154 George Culley to John Welch, June 28th 1799. NCRO/ZCU/6.

155 John Oxley to Sir John Delaval, Aug.15th 1783. NCRO/2DE/4/20/57.

156 N.C., May 4th 1751.

157 E.g. N.C., April 18th 1761, April 15th 1769, Jan.24th 1784.

the new White Globe Turnip seems to have replaced the previous Green and Red Top varieties¹⁵⁸ and this type held sway in Northumberland at least until the middle of the 19th century.

Swedes

The Swede or Ruta Baga had one main advantage over the common turnip, namely that it was able to be kept longer into the Spring. The Swede's weight per acre was much smaller than that of the turnip, but its superior feeding properties easily compensated for this.¹⁵⁹ It appears to have been introduced to Britain in the 1760s, probably from several Continental sources,¹⁶⁰ but is not known to have been in Northumberland before the 1780s. Culley pointed out that the early Northumberland innovators had been deterred by its small size and the rate at which it was devoured by various pests,¹⁶¹ but that its superior keeping qualities had convinced many of its value by 1804.¹⁶² This is confirmed by an observation of 1803 that the cultivation of Ruta Baga was gaining ground in the County.¹⁶³ By 1809, Northumberland breeders and feeders had come to depend on the Swede to fill the 'Hungry Gap' that still remained between the end of the turnips and the beginning of the new growth of grass.¹⁶⁴ Without the Swede, stock had to be sold and losses cut when the turnip crop failed. This it did in Glendale in the Autumn of 1799, causing a rush of local farmers to Dunse Fair to sell stock,¹⁶⁵ and farmers at Netherwitton were faced with similar problems when their turnips rotted in the February of 1809.¹⁶⁶ An account of 1810 confirms the importance of the Swede and dates its introduction to Northumberland in 1786.¹⁶⁷ Seed was advertised from 1803,¹⁶⁸ and was

158 e.g. N.C., June 8th 1793, June 6th and 13th 1795, June 11th 1796, June 5th 1802.

159 G.H. Ramsey to Newcastle Farmers' Club, March 6th 1847. L. & P., Bolbec N630.6/1.

160 Nigel Harvey, 'The Coming of the Swede to Great Britain', A.H., 24, 1, 1950, pp.286-8.

161 Bailey and Culley, 1794, p.93. 162. Ibid., 1805, p.105.

163 F.M., 4, 1803, p.562. 164 F.M., 10, 1809, p.133.

165 George Culley to John Welch. Sept.4th 1799.NCRO/ZCU/6.

166 Robert Kell to Walter Trevelyan, Feb.18th 1809.NCRO/ZTR/23/35.

167 F.M., 11, 1810, pp.426-7. 168 N.C., June 4th 1803.

available from local stock¹⁶⁹ or imported from Warwickshire,¹⁷⁰ Sussex,¹⁷¹ or Norfolk.¹⁷² At mid-century it was estimated that Swedes accounted for about 25% of the acreage under turnips in Northumberland.¹⁷³

Mangold

The great advantage of the Mangold, Mangel or Mangold Wurzel, was that it was resistant to that scourge of the common turnip, the turnip fly. Harvey has traced its introduction to Britain in 1786 "with fair certainty".¹⁷⁴ If so, its appearance in Northumberland was planned only very shortly after. A letter to Lord Tankerville in London from his land agent, John Bailey in Chillingham, dated December 1787, shows the rapid diffusion effect an active agent could have. "I hear a great deal in praise of the Mangel Worsal, or Root of [Scarcity?] introduced by D^r Lettsome, where the seeds may be had, - if [Y^r?] Lordship, thinks it an Object worth the Farmers attention, & [will please?] to send, a little of the Seed here, I will do it Justice in the Cultivation, and if found to ans^r distribute [it to.?] the Tenants."¹⁷⁵ It is not known if the seed was ever sent or the Mangold grown in the County at this early date.

Although Mangold seed from the South was available in Northumberland in 1812,¹⁷⁶ and about twenty farmers were said to be growing the root in Cumberland in 1815,¹⁷⁷ its adoption in Northumberland was anything but rapid. In 1867, only 131 acres of Mangold were cultivated.¹⁷⁸ Resistance was not so much because of disadvantages inherent in the Mangold, indeed it was capable of surviving on somewhat stronger land than the turnip,¹⁷⁹ but because Northumberland was "one of the chosen seats of turnip husbandry".¹⁸⁰ Once the Swede had compensated for the main short-coming of the turnip, there was no real incentive to risk further change and

169 N.C., Feb.20th 1813.

170 N.C., April 27th 1811.

171 N.C., May 11th 1811

172 N.C., May 29th 1824.

173 NCRO/ZHE/34/1.

174 Nigel Harvey, op.cit.,p.286.

175 John Bailey to Earl Tankerville, Dec.1787.NCRO/Tankerville Box 4/C/9 unsorted. Parts of the document appear to have been eaten.

176 N.C., March 7th 1812.

177 F.M.,16, 1815, p.70.

178 PRO/MAF/68/139

179 Mr. Ramsay to Newcastle Farmers' Club,Dec.3rd 1859. L.& P. Bolbec N630.6/3.

180 Seymour Bell, op.cit.,1860, NCL/L630.

a quaint sort of loyalty developed towards the turnip. In 1859, it was declared that "Where land will grow turnips without apprehension [about disease] ... the turnip will hold its ground in our county".¹⁸¹

Crop Rotations

Crop rotations seem to have varied considerably both within the County and within the century 1750-1850. Culley suggested that the basic and very simple three-course rotation of fallow - wheat - oats had been the most prevalent rotation in Northumberland in the 18th century, but that there was also a convertible rotation in operation on dry soils, consisting of oats - oats - turnips - barley or wheat - clover and grass for 4 to 7 or more years.¹⁸² There seems little reason to doubt his assertions. The first rotation was certainly in use in Ilderton between 1775 and 1784,¹⁸³ around Gosforth and, with additions of extra corn crops, in most other parts of the County visited by Arthur Young in 1769.¹⁸⁴ Young was generally critical of Northumberland rotations, remarking that corn crops were repeated far too often for the good of the soil or the crop yield. At Cambo the course was fallow - barley - oats - oats;¹⁸⁵ between Morpeth and Alnwick it was fallow - wheat - beans or peas - oats - oats.¹⁸⁶ Turnips were grown in rotation at all the places Young visited, except Cambo, but seemingly much more as a fallow addition to an exhausting corn crop, as in Culley's second typical rotation, than as the basis of a new type of exploitation of the soil. Clover was grown in many places, but is not mentioned as part of general rotations and was probably used more to lay down tired land for several years.

Both the typical 18th century Northumberland rotations contravened what was, by the 19th century, the golden rule of husbandry, 'never take

181 Newcastle Journal, Dec. 31st 1859. 182 Bailey and Culley, 1805, p.69.

183 Cropping Plans of Robert Ilderton of Westoe, NCRO/NRO/678.

184 Arthur Young, Northern Tour, 1770, 3.

185 Ibid., p.94

186 Ibid., p.34.

two white crops in succession'.¹⁸⁷ This was one fundamental precept written into many Northumberland leases and cropping plans from the late 18th century, and the only obvious way to obey the rule was to alternate corn or white crops with turnips or clover, green crops or naked fallow. This was precisely the function of the famous Norfolk rotation of turnips - barley - clover - wheat which in the late 18th century was considered the most obvious indication of good farming. Although the principle of the Norfolk rotation was acceptable to Northumberland, its practical details were not. Instead, what was known as the Durham four-course, a rotation of fallow (perhaps with some turnips or potatoes) - wheat - clover (with some beans or peas) - oats became common in the 19th century throughout those parts of the County which found most difficulty growing turnips and most profit growing wheat. In whatever form, this was 'alternate' husbandry, what M^CCulloch referred to as "the grand distinction between the old and new or improved systems".¹⁸⁸

In other parts of Northumberland, alternate husbandry also came to be practiced, but in another different form. The clover lea was generally extended to two years, sometimes longer, so that the rotation was turnips- barley or wheat - two years clover and seeds - oats. Marshall could see no real difference between this and the Norfolk system, but John Bailey thought there was and was probably right.¹⁸⁹ Under the Norfolk system, the emphasis was on grain production: under what came to be known as the 'Northumberland system, it was on fodder for stock. This was not just 'alternate' husbandry, but also 'convertible' husbandry. With nearly the whole farm readily convertible to pasture or tillage, farmers who could use this rotation were in a peculiarly flexible position, enabling them rapidly to alter stock numbers or corn acreage to meet changing market or weather conditions. It was this system that Sinclair

187 Seymour Bell, op.cit., NCL/L630.

188 J.R.M^CCulloch, op.cit., 1, p.469.

189 William Marshall, op.cit., 1, p.51.

thought most differentiated Scottish agriculture from the general English system of permanent arable and permanent pasture separately conducted on distinct portions of land,¹⁹⁰ and which M^CCulloch saw in 1837 as making its way from Scotland "into the best farmed districts of England; so that more grass-land (not permanent, but for a few years) is now seen in the strictly arable districts than was formerly met with; while a greater breadth of ground is under the plough in many of those counties which formerly were almost exclusively in grass."¹⁹¹ In the late 18th century, Norfolk farmers and their rotations were reputed the best in the country: by the early 19th century, this reputation had largely been superceded by that of Northumberland farmers and their five-course rotation.¹⁹²

Yet there were obviously many parts of the country, and of Northumberland too, where turnips were difficult to grow and where temporary clover and grass rapidly declined in quality and quantity, which were not suited to convertible husbandry.¹⁹³ There is evidence of some tenants in south Northumberland attempting a sort of convertible husbandry by laying down tillage and conducting a Durham four-course on what had been pasture.¹⁹⁴ In 1795, Sir John Delaval was struggling to find a mode of husbandry "which may be most approved of by different persons so as to be suitable for both Seaton Delaval & Ford Estates".¹⁹⁵ The solution was to try to extend the Durham four-course to a six-course by growing clover and grass for three years so that "if any alteration be thought necessary in plowing in the old Grass Land and laying down any of the Quarters most suitable for Grass in lieu thereof, the difference in regard to quantity would not be so material".¹⁹⁶ It was

190 G.E.Fussell, 'Impressions of Sir John Sinclair', A.H., 25, 4, 1951, p.167.

191 J.R.M^CCulloch, op.cit., 1, p.469.

192 G.E. Fussell and M.Compton, 'Agricultural Adjustments after the Napoleonic Wars', Economic History, Feb.1939, p.193.

193 Richard Parkinson, The Experimental Farmer, 1807, pp.139-43.

194 H.Ridley to Sir John Delaval, Feb.11th 1793. NCRO/2DE/4/22/13.

195 John Bryers to Sir John Delaval, March 6th 1795. NCRO/2DE/4/22/35.

196 Ibid.

a compromise aimed at convertibility, and one used by the Duke of Portland on the heavy land of his Bothal estate in 1851 whereby four quarters, each of 77 acres and including one year's clover, became six 'quarters' of 52 acres each, with three years clover and grass.¹⁹⁷

Whether clover and grass had stood for one, two or more years, it was nearly always broken up for oats,¹⁹⁸ except where the pasture was ploughed in August for a bastard or rag fallow and wheat succeeded.¹⁹⁹ But on lands under the Durham four-course it was generally thought worthwhile to sacrifice a year's crop to naked fallow for the benefit of the following wheat crop. Northumberland farmers practising this rotation had two main obstacles with which to contend. The first was the tendency of land to become clover-sick and to reject the clover crop, particularly if attempts were made to extend it to a second year for pasture; but this problem was fairly easily overcome by alternating beans or peas with clover once in eight years.²⁰⁰ The second was the nagging feeling that the naked fallow year was unproductive and an ostensible indication of backward agriculture. In 1847, Hugh Taylor declared, "If we look over the district around Newcastle, we cannot but be struck with the great proportion of land which is lying in an unproductive state, for one year at least".²⁰¹ In the 1840s, increased use of drainage and manures made the cultivation of fallow crops, of turnips and potatoes and even beans, peas and tares, easier, but in 1849 it seems that "Fallow Crops upon strong clays, such as turnips, etc,... as far as our present knowledge leads us, they must still be the exceptions to the rule... Indeed, the great difficulty with strong undrained clay, is, that we cannot vary our system: the land is not what is called 'convertible'".²⁰² Despite all the ideas and optimism, it was generally

197 NCRO/ZSA/18/5.

198 Evidence of G.H. Ramsey to Select Committee on Agricultural Customs, 1848, p.195.

199 N.C., Oct. 14th 1815.

200 Seymour Bell, op.cit., c.1859, NCL/L630.

201 Hugh Taylor to Newcastle Farmers' Club, July 3rd 1847.L & P. Bolbec N630.6/1.

202 William Glover to Newcastle Farmers' Club, Nov.3rd 1849.L.&P.Bolbec N630.6/2.

concluded that "wheat, beans, and clover are the natural productions of this kind of land - that a bare fallow is the best preparation for the course, and hence must continue an important part of our system of agriculture".²⁰³ So intent was Northumberland interest at mid-century in the profitable use of the fallow year that the Duke of Northumberland's Commissioner thought it a worthwhile exercise to classify not only the types of farms in the County, but also their tenants, by the use they made of the fallow.²⁰⁴ Farms growing turnips on about $\frac{1}{3}$ rd of their fallow were said to occupy the strong clays and stiffish loams of the southern and central parts of the County, to range from 100 to 500 acres and to use a fallow - wheat - grass - oats rotation. Farms growing turnips on about two-thirds of their fallow occupied the good loamy soil of Tyneside and the north-east, were from 300 to 800 acres in size and followed a rotation of fallow - wheat or barley - grass for one or two years - oats. Farms having the whole of their fallow in turnips were those large farms in the northern part of the County, particularly in Glendale and on the Tweed, which followed the classic Northumberland five-course. Around Morpeth, Newbiggen and on the Tyne some miles above Newcastle were farms of 100 to 500 acres on good stiff clay or loam with half their acreage in permanent pasture for fattening stock and with as many turnips as possible - probably averaging $\frac{1}{3}$ rd of the fallow - to supplement this herbage. In central Northumberland, around Kirkharle and Belsay and to the west, were farms of from 200 to 500 acres on very various soil, three-quarters of which was kept in permanent pasture for fattening stock and the best parts devoted to a rotation of turnips - barley or oats - grass - oats. Land which would not grow turnips was turned to grass and the cultivation of turnips attempted elsewhere. Taylor's last group was the small farms of 100 to 300 acres which

203 R.W. Matthews to Newcastle Farmers' Club, Aug. 5th 1848. L. & P., Bolbec N630.6/2.

204 Hugh Taylor's Classification of Farms, 1850. AC/N/3/13.

proliferated between the Tyne and the Blyth on stiff clay soils and maintained dairies to supply the urban population. Such farmers generally used a rotation of bare fallow - wheat - grass - oats but were driven by the demands of their stock to grow some poor turnips on the fallow though the land was quite unsuited to them.

A more striking picture of the different rotations in operation in 19th century Northumberland is produced by using information on township rotations included in the Tithe Files.²⁰⁵ Map 15:11 uses this information and shows five-course or longer rotations to have been general in Tweedside and common on the northern coast and along the Tyne from Ovingham as far west as Lambley. Virtually the whole of the rest of the County, but particularly the south-east, was dominated not by the Northumberland five-course, often claimed to be "most commonly used in Northumberland",²⁰⁶ but by the Durham four-course which had been "most prevalent time out of mind".²⁰⁷ The Tithe Files expressed the dissatisfaction of many farmers who felt constrained by the inconvertibility of the rotation and their inability to grow proper fallow crops of turnips. In Kirkley, Ponteland, it was remarked in 1840 that "The Rotation is the Durham 4 Course - one which is not calculated to improve the Land, or Enable the Farmer to make the most of it".²⁰⁸ In very few places did the growth of a regular turnip crop enable a Norfolk rotation to be followed. In Bywell St. Andrew it was remarked that "The Rotation is the Norfolk four Course - Turnips Barley Clover Wheat - This is on the $\frac{2}{3}$ ^{ds} - on the $\frac{1}{3}$ ^d or fell Land, there is little regular Husbandry, the greatest part of it being in Grass and the remainder in the Durham four Course of Fallow - Wheat Clover Oats."²⁰⁹ Not only did soil and climatic conditions bind most Northumberland farmers to this traditional rotation, but so too did many leases,²¹⁰

205 PRO(A)/IR/18/question 11.

206 Tithe File For Hazleridge, Chatton, April 22nd 1842.PRO(A)/IR/18/7029.

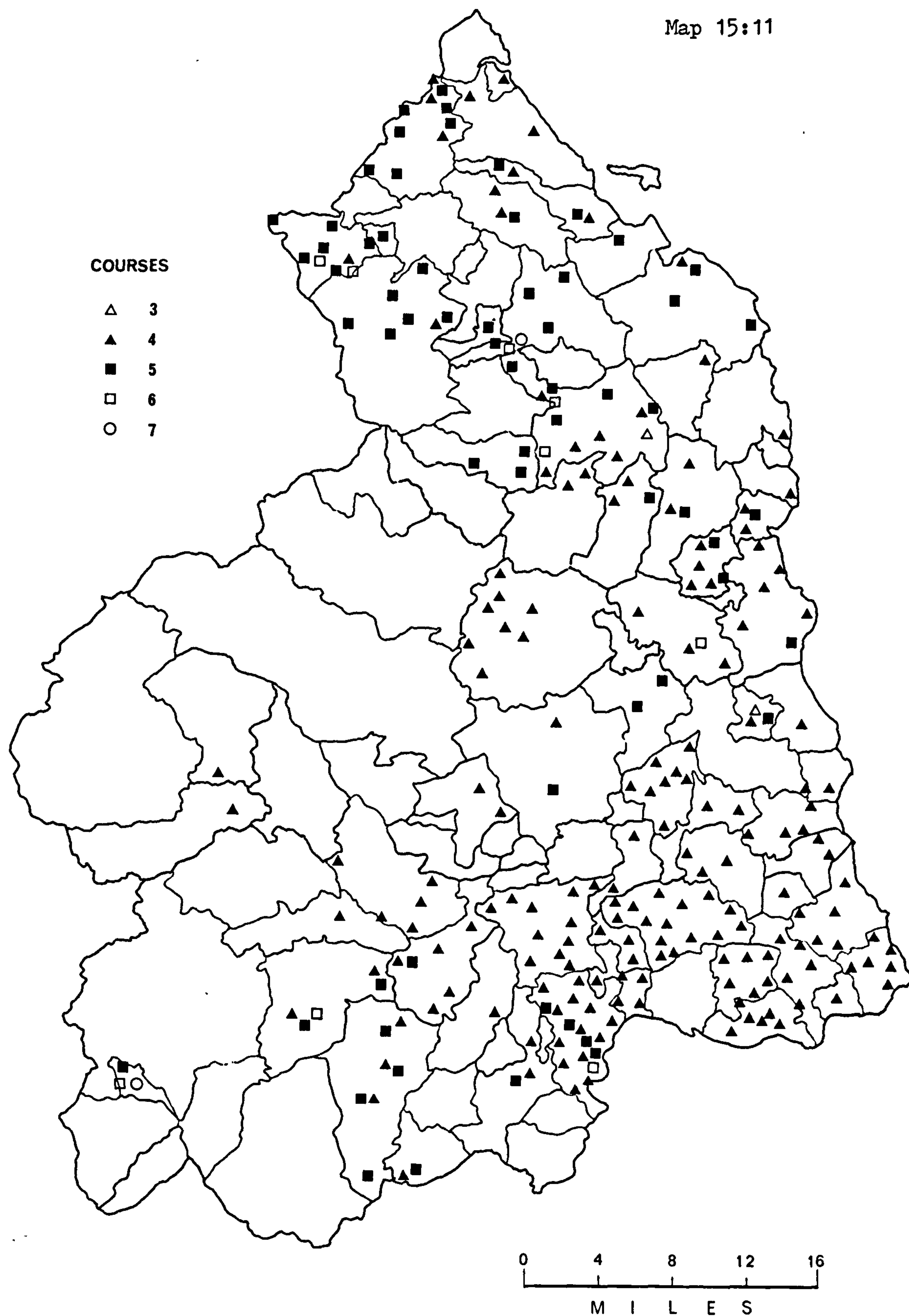
207 'Talpa' 1864 in Seymour Bell, op.cit., NCL/L630.

208 Tithe File for Kirkley, Ponteland, May 20th 1840.PRO(A)/IR/18/7088.

209 Tithe File for Bywell St. Andrew, April 25th 1840.PRO(A)/IR/18/6868.

210 Robert Walter's Memorandum 1837, NCRO/ZMI/B41/7. See also NCRO/ZMI/B42/1 and NCRO/ZMI/S/18.

Map 15:11



Crop Rotations, c.1840.

Source: Tithe Files, PRO(A)/IR/18.

though some landlords went to the lengths of describing different rotations for the various soils on their farms.²¹¹

The extended rotations of south-west Northumberland were, as Taylor described, much more a convertible agriculture than they were an alternate, the difficulty of growing turnips reliably and on a large scale ensuring the frequent occurrence of bare fallow. On the valuable wheat lands of Lesbury and Bilton a peculiar rotation was in vogue "that of taking 6 or 7 crops before laying down, alternating white and green crops with beans and turnips",²¹² but the main exceptions to the normal four- or five-course rotations occurred on the higher and more marginal land where farmers took crops as weather, soils, markets and landlords allowed and where the surveyors were often hesitant to ascribe any rotation at all. The reporter for Ditchburn, Eglington, doubted "if that can be called a Rotation which is rarely twice the same";²¹³ in Harbottle, the reporter remarked that "No regular Course of Husbandry is observed; Each Farmer only having a few Acres of Arable land, he sows it each year with that sort of Grain which he is most in need of";²¹⁴ and in Harehope, Eglington, the surveyor was told by one farmer that he had his farm "in no regular course, sometimes having very little corn in it, sometimes having it nearly all corn".²¹⁵ Farms near towns, and particularly the market gardens of Hexham and Morpeth, were able to apply an abundance of cheap manure and were able to follow very intricate rotations of intensive cropping.²¹⁶

Culley described the Northumberland five- or six-course rotation as the "course, or courses which by throwing up such a plentiful produce, enable the farmers to keep a very increased quantity, both of neat

211 Notes by W.H. Sitwell, Barmoor Estate c.1850. NCRO/NRO/470/52.

212 Tithe File for Lesbury, March 4th 1841. PRO(A)/IR/18/7101.

213 Tithe File for Ditchburn, Eglington, Nov.12th 1839. PRO(A)/IR/18/6938.

214 Harbottle, Hoystone, July 25th 1839. PRO(A)/IR/18/7009.

215 Tithe File for Harrup, Eglington, Oct.2nd 1839. PRO(A)/IR/18/7014.

216 e.g. John Fuller, History of Berwick, 1799, p.456.

cattle and sheep", the manure from which promoted the growth of abundant turnip and corn crops.²¹⁷ Yet renowned as this rotation became, it was certainly not practised on most lands in the County. It was a genuine surprise to many visitors to find that the Northumberland system was not at all typical in Northumberland. When Professor Wilson from Edinburgh visited in 1864, he remarked "Although aware of the rotation followed commonly in Northumberland, I was not at all prepared to find that the naked or empty fallow was the rule, and a root or 'fallow' crop the exception".²¹⁸ Wilson went further; he associated bare fallow with low meat and expensive grain production and even with inefficient, old-fashioned implements. The debate that had raged long before, in Culley's day, between the 'fallowests' and the 'anti-fallowests' in which Culley had prophesied that naked fallow would be totally abolished in another century "if no fortuitous circumstances arise to check the exertions and spirit for improvement which have been so prevalent of late years, and so generally diffused through this district",²¹⁹ was certainly far from decided in mid-19th century Northumberland.

Crop Yields

In the absence of individual farm accounts giving details of changes of yield on the same farm over a large number of years, it is not easy to deduce changes in crop yield over the whole County and century. They naturally vary greatly with differences in soil quality, location, with rotations, weather, management policy and farming skill. Even on a County scale, variations from year to year were significant. The wheat crop of 1800, for example, was reckoned to have yielded over the whole County no more than three-quarters of the grain of an average crop.²²⁰ On a smaller scale, the variations could be immense. Harvest time, for example, generally some weeks later in Northumberland than in southern England, varied from season to season and from place to place. Poor

217 A.A., 14, 1790, p.473.

218 John Wilson, Northern Farms and Farming, 1864, p.19, NCRO/ZSW/Add. & Misc.

219 Bailey and Culley, 1805, pp.68-9 220 PRO/BT/6/139.

weather made for a harvest 10 days later than usual on Tyneside in 1820, but three weeks later on higher ground.²²¹ On one Northumberland farm, the harvest of 1799 was not got in until the very end of November,²²² and of Elsdon Parish it was said in 1838 that "the Corn does not ripen until October and it is not unusual to see the Oats standing in the fields in the Month of November".²²³ The date of the commencement of harvest on one south Northumberland farm between 1795 and 1817 varied between August 17th and October 19th with an average starting date of September 9th.²²⁴ On a farm near Alnwick between 1832 and 1859, harvest started between August 11th and September 17th and averaged August 26th, a full two weeks earlier.²²⁵ Under such conditions, there was likely to be wide variation in crop yield.²²⁶

Arthur Young was the first commentator to examine crop yields in various parts of Northumberland during this period. Map 15:12 summarises his assertions, but even collectively, these can give but a very inadequate picture of Northumberland grain produce. The yields he reported at Glenwhelt, on poor, high land near the Cumberland border, were surprisingly large. It is not impossible, of course, that in reporting a Glenwhelt wheat yield of 30 bushels per acre, a barley yield of 32 bushels, a bean yield of 70 bushels and an oat yield of no less than 90 bushels,²²⁷ Young was being duped, something that was said to have happened more than once when he had become very much more experienced.²²⁸ A superficial conclusion would be that the best arable lands of Northumberland were the moors of Haltwhistle. Clearly some circumspection is needed in the appraisal of such sporadic evidence. Perhaps the most

221 William Todd to George Silvertop, June 28th 1820. NCRO/ZCO/9/1.

222 F.M., 19, 1818, p.57.

223. Tithe File for Elsdon Parish, June 19th and 20th 1838. PRO(A)/IR/18/6955.

224 F.M., 19, 1818, p.57.

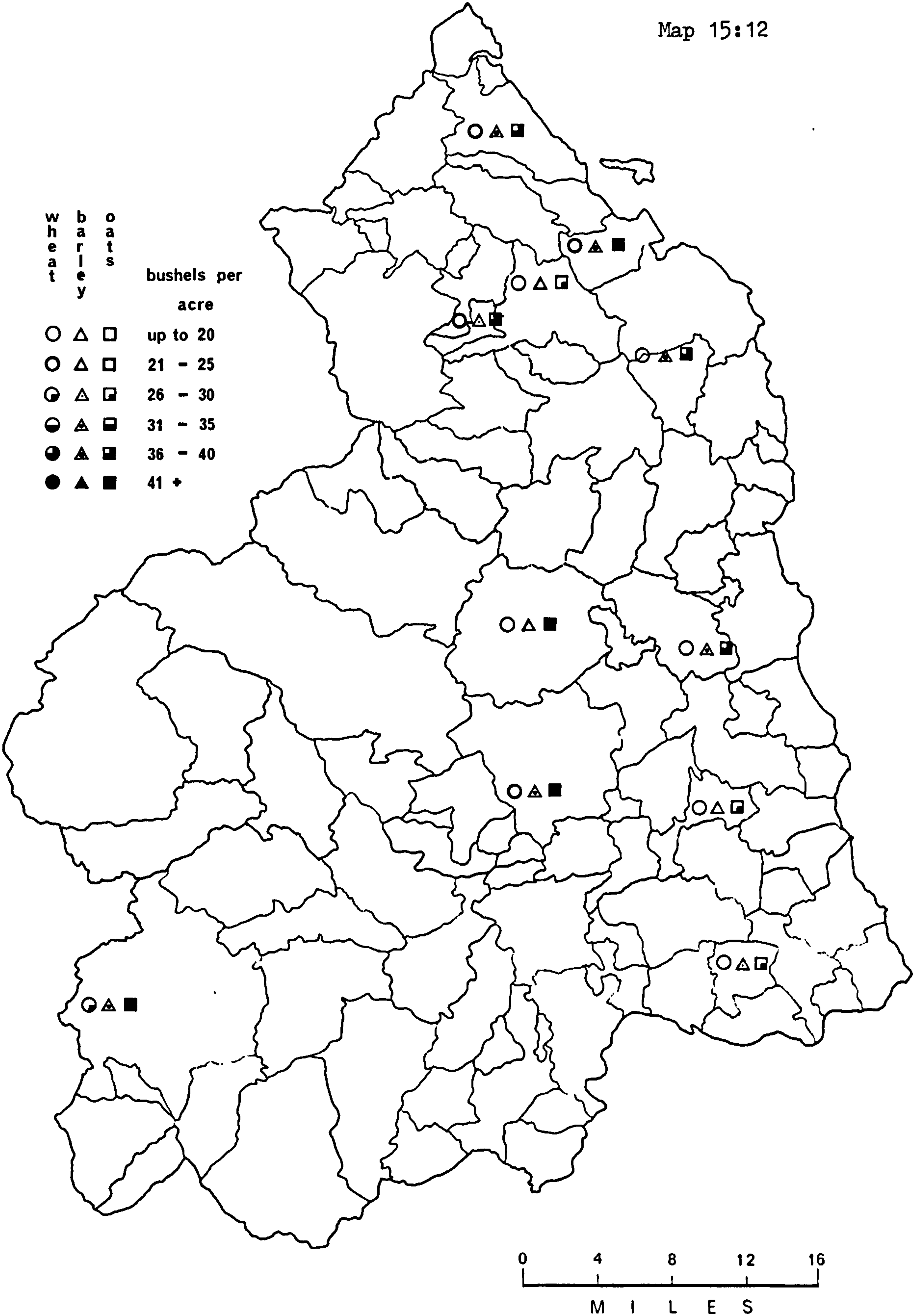
225 Seymour Bell, op.cit., NCL/L630.

226 Vide E.L. Jones, Seasons and Prices, 1964, passim.

227 Arthur Young, op.cit., p.104.

228 Thomas Stone, A Review of the Corrected Agricultural Survey of Lincolnshire by Arthur Young, 1800, pp.21-2.

Map 15:12



Corn Yields, 1769.

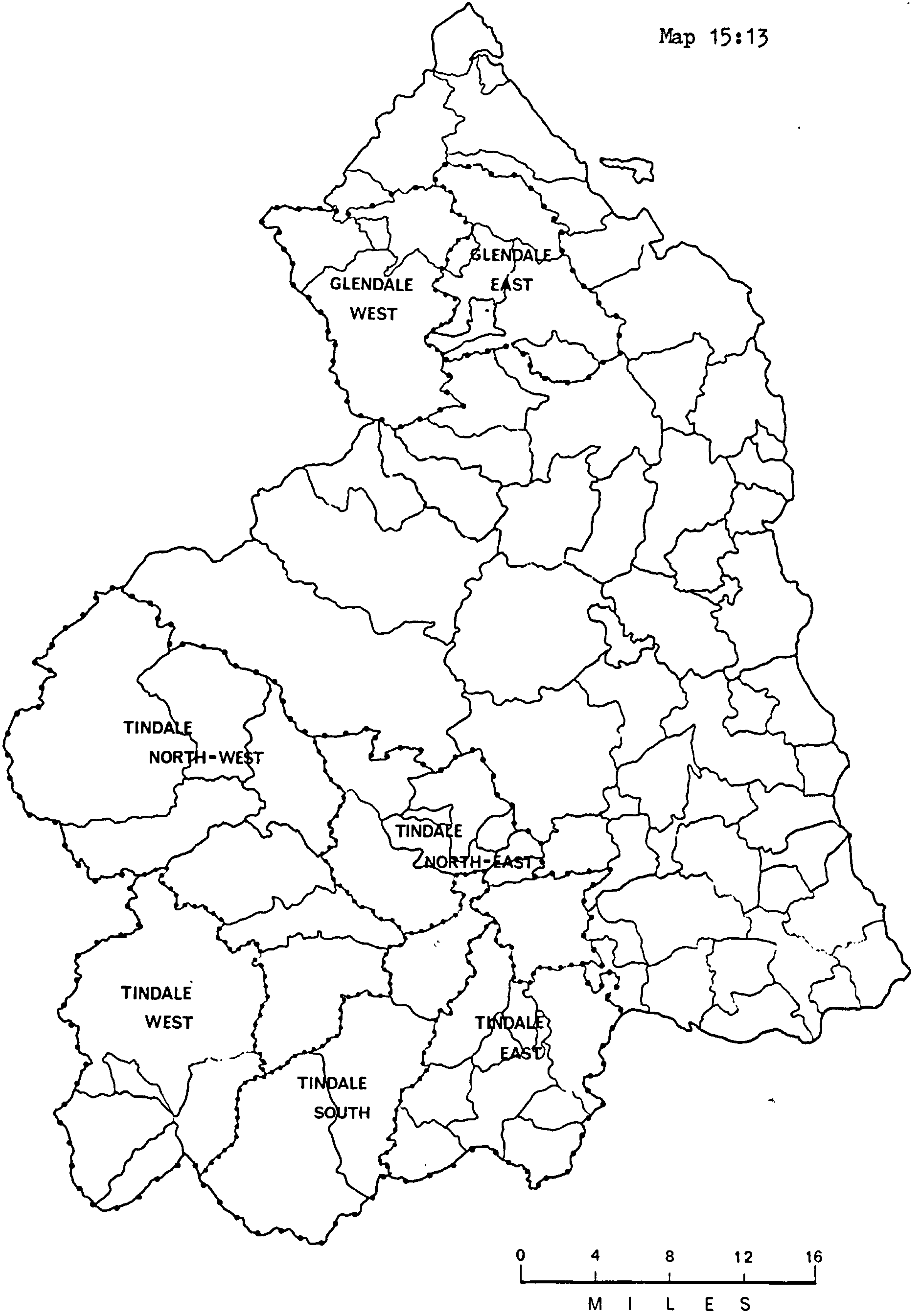
Source: Arthur Young, Northern Tour, 1770.

that can be gleaned from Young's figures is that 6 of his 11 'sample areas' yielded below 20 bushels of wheat per acre, and one at Hetton, west of Belford, was producing a mere 10 bushels per acre.²²⁹ No other farm at any time is known to have produced so little, certainly not in a season when other areas were yielding over 30 bushels. Another point of some importance was that in his travels north from Newcastle along the Great North Road, Young passed through what was later some of the best wheat land in the County. Yet, not until he reached Belford and north Northumberland did he find wheat yields in excess of 20 bushels per acre.

The Crop Returns of 1795 give the acreage under each crop and the produce of each for that year for the Divisions of Glendale and Tindale Wards. They also provide the yield in an average year for some of the acreages. As these statistics cover many pages, are scribbled in pencil, use a variety of local measures and are for thousands of unnamed sub-areas ranging from townships to individual fields, there is some possibility that error may have crept into the processing of the figures. Yet the Returns provide the earliest and most comprehensive yield figures for a large area of the County and their use has been deemed worthwhile. Map 15:13 shows the area they cover and Tables 15:6, 15:7 and 15:8 indicate that the north of the County was considerably more productive than the south-west. The figures suggest an average wheat yield of 21 bushels per acre in a normal year for Glendale and Tindale Wards combined. Other figures for 1795, giving the total County produce, are shown on Table 15:9. By referring to the total County acreage under these grains in 1803, and allowing for the degree less than a normal crop the 1795 yields were said to have been, it is possible to construct a crude County crop yield average for the end of the 18th century, but it should be remembered that as the crop acreage of 1803 is likely to have exceeded that of 1795, these yield estimates are probably too low.

229. Ibid., p.64.

Map 15:13



Ward Divisions of 1795 Crop Returns.

Source: W.Whellan, Directory of Northumberland, 1855.

Table 15:6

Glendale and Tindale Wheat Yields, c. 1795

	1 7 9 5 C R O P			N O R M A L C R O P		
	Acres	Winchester Bushels	Yield Per Acre	County * Adjusted Yield Per Acre	Acres	Winchester Bushels Yield Per Acre
GLENDALE EAST	1507	31028	20.6	28.6	820½	21982 26.8
GLENDALE WEST	1313	25559	19.5	27.1	860	19962 23.2
GLENDALE TOTAL	2820	56587	20.1	27.9	1680½	41944 25
TINDALE SOUTH	949	14976	15.8	21.9	497¼	9190 18.5
TINDALE WEST	254½	5080	19.2	26.7	23½	520 22.1
TINDALE N.W.	1034	15072	14.6	20.3	749¾	14525 19.3
TINDALE N.E.	1186¼	19552	16.5	22.9	286¼	6504 22.7
TINDALE EAST	3377½	45638	13.5	18.8	1390	24719 17.8
TINDALE TOTAL	6801¼	100318	14.7	20.4	2946¾	55458 18.8
GLENDALE AND TINDALE TOTALS	9621¼	156905	16.3	22.6	4627¼	97402 21.0

* Northumberland Wheat Crop for 1795 reckoned 7/25ths below normal on total County return. PRO/HO/42/37/119.

Table 15:7

Glendale and Tindale Barley Yields, c.1795

	1 7 9 5 C R O P			N O R M A L C R O P		
	Acres	Winchester Bushels	Yield Per Acre	County * Adjusted Yield Per Acre	Acres	Winchester Bushels Yield Per Acre
GLENDAL E A S T	1048 $\frac{3}{4}$	27028	25.8	29.0	697 $\frac{3}{4}$	17910 25.7
GLENDAL E W E S T	1421 $\frac{1}{2}$	43472	30.6	34.4	1018 $\frac{1}{2}$	32056 31.5
GLENDAL E T O T A L	2470 $\frac{1}{4}$	70500	28.5	32.1	1716 $\frac{1}{4}$	49966 29.1
TINDAL E S O U T H	1174 $\frac{3}{4}$	27164	23.1	26.0	742 $\frac{1}{2}$	17918 24.1
TINDAL E W E S T	711 $\frac{1}{2}$	16516	23.2	26.1	272	5150 18.9
TINDAL E N . W .	1571 $\frac{1}{4}$	32002	20.4	23.0	987	20758 21.0
TINDAL E N . E .	2539 $\frac{1}{2}$	52036	20.5	23.1	1149	27502 23.9
TINDAL E E A S T	2330 $\frac{1}{2}$	55628	23.9	26.9	780 $\frac{3}{4}$	20110 25.8
TINDAL E T O T A L	8327 $\frac{1}{2}$	183346	22.0	24.8	3931 $\frac{1}{4}$	91438 23.3
GLENDAL E A N D TINDAL E T O T A L	10797 $\frac{3}{4}$	253846	23.5	26.4	5647 $\frac{1}{2}$	141404 25.0

* Northumberland Barley Crop for 1795 reckoned ¹/9th below normal on total County return.
PRO/HO/42/37/119.

Table 15:8Glendale and Tindale Oat Yields, c.1795

	1 7 9 5 C R O P			N O R M A L C R O P		
	Acres	Winchester Bushels	Yield* Per Acre	Acres	Winchester Bushels	Yield Per Acre
GLENDAL E EAST	3810 $\frac{1}{2}$	118692	31.1	1759	57710	32.8
GLENDAL E WEST	4176 $\frac{1}{2}$	129949	31.2	3236	100946	31.2
GLENDAL E TOTAL	7987	248641	31.1	4995	158656	31.8
TINDAL E SOUTH	3078 $\frac{3}{4}$	69474	22.6	1983 $\frac{3}{4}$	46318	23.3
TINDAL E WEST	1705 $\frac{1}{2}$	39530	23.2	699	14114	20.2
TINDAL E N.W.	3864 $\frac{3}{4}$	73950	19.1	2781	55578	20.0
TINDAL E N.E.	5111	111442	21.8	2267	46706	20.6
TINDAL E EAST	6577	143596	21.8	2511	59608	23.7
TINDAL E TOTAL	20337	437992	21.5	10241 $\frac{3}{4}$	222324	21.7
GLENDAL E AND TINDAL E TOTALS	28324	686633	24.2	15236 $\frac{3}{4}$	380980	24.9

* Northumberland Oat Crop reckoned equal to normal on total County return. PRO/HO/42/37/119.

Source: NCRO/QSB/89/32

Table 15:9Northumberland Crop Yields, c.1795

	Winchester Bushels Produced in 1795	Compared with Normal Yield	Adjusted Produce in Winchester Bushels	Crop* Acreage 1803	Yield Per Acre in Winchester Bushels
WHEAT	549000	7/25ths LESS	762500	39237	19.4
BARLEY	517928	1/9th LESS	582669	21881	26.6
OATS	1861744	EQUAL	1861744	70763	26.3
RYE	19312	1/7th LESS	22531	1482	15.2
BEANS	15704	EQUAL	15704		
PEAS	65632	1/6th LESS	78758	4653	20.3

Sources: PRO/HO/42/37/119.
* AC/y/4/2/b/5

They give a County wheat yield figure of 19.4 bushels per acre, compared with a Glendale and Tindāle figure of 21 bushels.

Twenty-five parishes returned actual wheat yields for the season in the 1801 Crop Returns for Northumberland. These are shown on Map 15:14, and for the first time since Young's tour give an idea of the productivity of the wheat lands along the Coast. Yields of between 26 and 30 bushels of wheat per acre were reported from Longbenton, Bothal and Hebburn, Lesbury and Howick and most of the north of the County. The highest yields of all, in Berwick, Chatton and Newburn are perhaps understandable, but that in Kirkwhelpington (32 bushels per acre) is not and reflects an unusually prosperous wheat crop of only 30 acres, yielding nearly double that of 1800.²³⁰ It is not unlikely that Young's returns from Glenwhelt in 1769 were the result of similar circumstances, perhaps exploiting a combination of small patches of little-used fertile ground, fortunate weather and the application of all available manure. The total wheat produce of 15,692 acres throughout Northumberland in 1801 was stated to have been 378,952 bushels, being a yield per acre of 24.1 bushels. As four parishes gave an idea of how much greater than normal was the crop of 1801, it would seem that the wheat crop of that year was some 20% above average. Hence the average Northumberland wheat yield at the beginning of the 19th century was probably about 20 bushels per acre, though Bailey and Culley suggest a yield of between 24 and 30 bushels at this time.²³¹

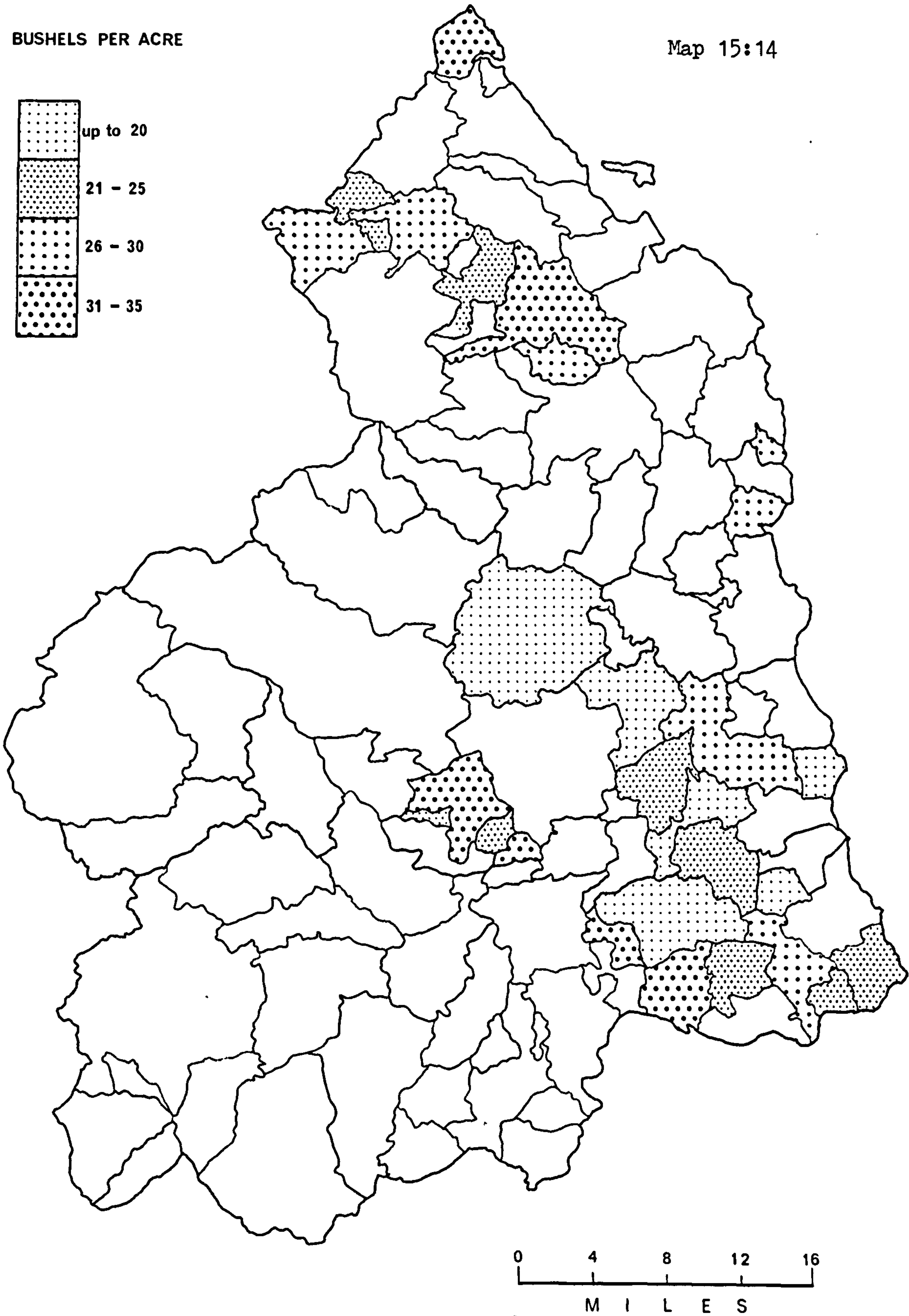
Some 26 townships were attributed with average wheat acreages in the Tithe Files, compiled between 1838 and 1843. Map 15:15 shows the distribution of these. It is unfortunate that so many readings are from the Newcastle area, but the map still suggests that the highest yields were in the north and along the coast and that the wheat yield

²³⁰ PRO/HO/67/8

²³¹ Bailey and Culley, 1805, p.76.

BUSHEL PER ACRE

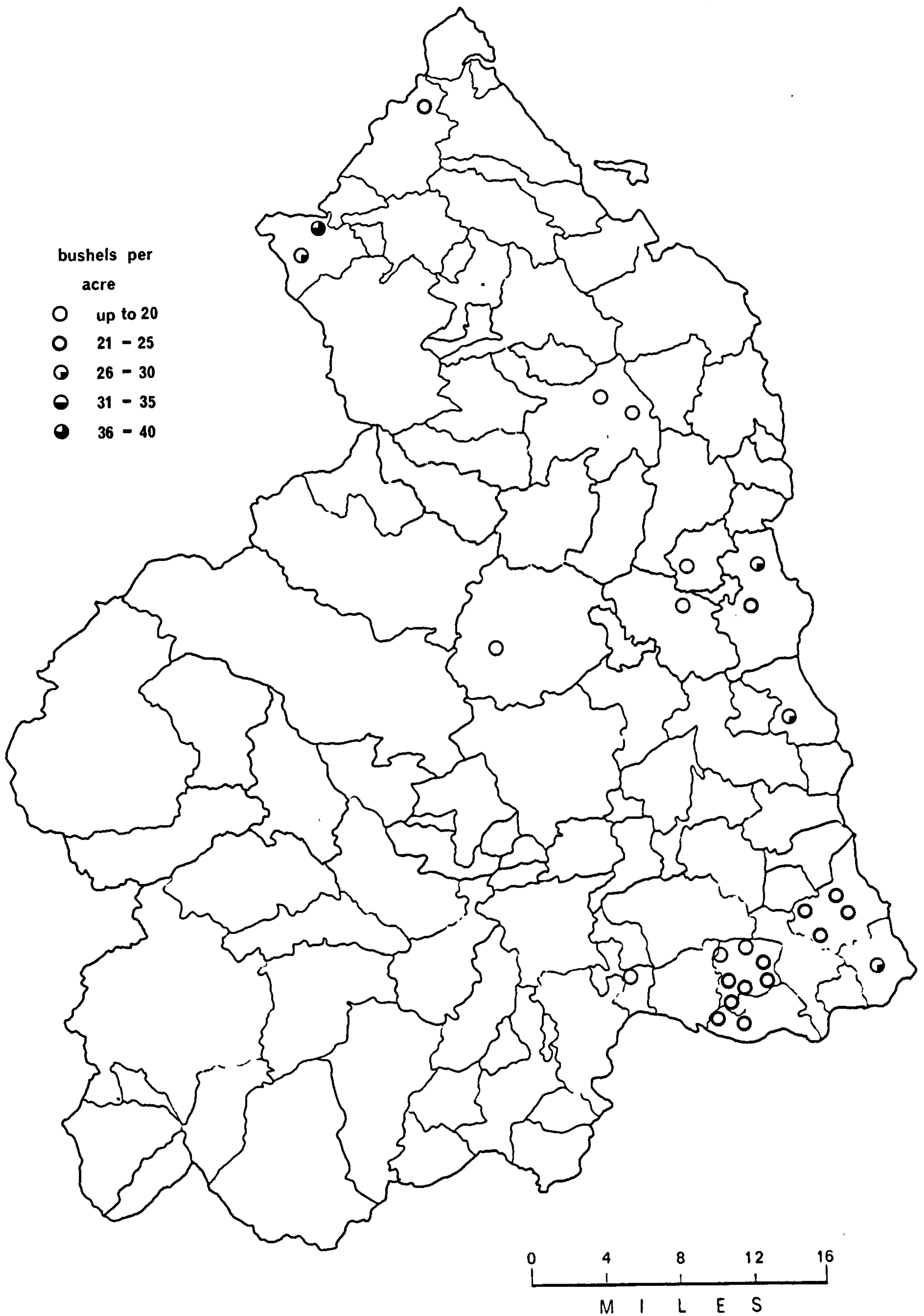
Map 15:14



Parish Wheat Yields, 1801.

Source: PRO/HO/67/8.

Map 15:15



Township Wheat Yields, c.1840.

Source: Tithe Files PRO(A)/IR/18.

deteriorated rapidly with progress inland. The Tithe Files give no quantity figures, but average township yield figures suggest a County wheat yield mean of 22.9 bushels per acre. Table 15:10 and the accompanying map are the result of County yield estimates made by Hugh Taylor in 1852.²³² In another account, he estimated the wheat yield in an average year for the whole of the 325,565 acres of wheat-producing land in the County to have been 22 bushels per acre,²³³ but the consensus of opinion among farmers at the Newcastle Farmers' Club, to whom he presented his paper, was that average yield was lower still, about 19 bushels, and still lower, about 16 bushels per acre, in County Durham. At the same meeting, William Stephenson declared that the average yield of better land in Northumberland was only 24 bushels per acre, and of poorer soils only 16. The discussion had been prompted by Caird's assertion, from information gained on his visit in 1851 to four or five of the best Northumberland farms, that the average Northumberland wheat yield was about 30 bushels per acre.²³⁴ The indignation of the meeting leaves no doubt that Caird's estimate was seriously awry. In that Bailey and Culley were largely talking of the estimated yield for Glendale rather than all Northumberland, their claim that yield ranged from 24 to 30 bushels should also be assumed to have been far too generous.

Rather surprisingly, what emerges from this sketchy picture, summarised in Table 15:11, is the apparent fact that there was little increase in average Northumberland wheat yield per acre in the century before 1850. It is probable that Young's estimates, like Caird's, were too generous and conceal an increase in yields in the late 18th century, but the other evidence is much more reliable and is hardly likely to be all totally incorrect. It is possible to isolate yields for the single

232 Hugh Taylor's Estimates, NCRO/ZHE/34/1

233 Hugh Taylor to Newcastle Farmers' Club, March 6th 1852. L. & P., Bolbec N630.6/2.

234 The Times, Nov.28th 1851; and James Caird, English Agriculture in 1850-1, 1852, p.474.

Table 15:10

Northumberland Crop Yields, c.1852

AREA	W H E A T Estimated		B A R L E Y Estimated		O A T S Estimated		BEANS AND PEAS Estimated	
	ACRES	YIELD Bushels Per Acre	ACRES	YIELD Bushels Per Acre	ACRES	YIELD Bushels Per Acre	ACRES	YIELD Bushels Per Acre
1	26000	28	6500	40	20084	44	9000	24
2	12500	20	2500	30	15000	34	3000	20
3	7500	18	1000	26	10000	28	500	14
4	6500	24	10500	30	17158	36	1000	22
5	10000	15	20000	28	35000	26	2000	12
COUNTY TOTAL	62500	22.7	40500	30.5	97242	32.9	15500	21.2

Sources: Hugh Taylor's Estimates, NCRO/ZHE/34/1.

Hugh Taylor to Newcastle Farmers' Club,
March 6th 1852. L. & P. Boibec N630.6/2

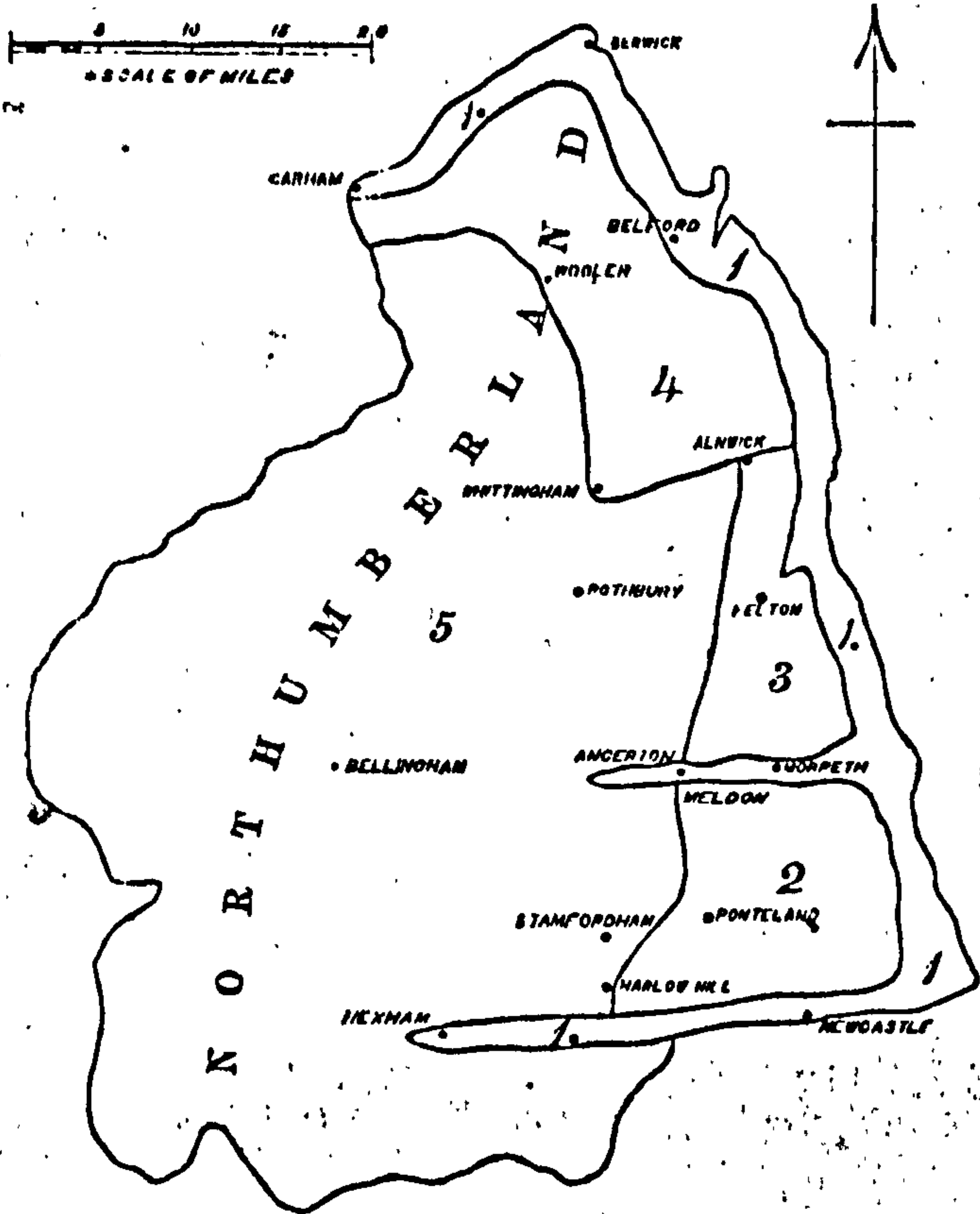


Table 15:11

Northumberland Crop Yields
(adjusted to normal crop where necessary)

		<u>WHEAT</u>	<u>BARLEY</u>	<u>OATS</u>
	(c.1769) ¹	(20.1)	(30.9)	(43.5)
Glendale & Tindale	c.1795 ²	21.0	25.0	24.9
	c.1795 ³	19.4	26.6	26.3
	c.1801 ⁴	20.0	28.4	31.4
	c.1805 ⁵	24-30	30-60	20-40
	c.1840 ⁶	22.9	33.6	33.4
	c.1852 ⁷	19-22	30.5	32.9

- Sources: 1. Arthur Young, Northern Tour, 1770.
 2. Local 1795 Crop Returns, NCRO/QSB/89/32
 3. 1795 Crop Return Totals, PRO/HO/42/37/119.
 4. 1801 Crop Returns, PRO/HO/67/8
 5. Bailey and Culley, 1805, pp.76, 82, 85.
 6. Tithe Files, PRO(A)/IR/18.
 7. Hugh Taylor's Estimates, NCRO/ZHE/34/1 and presented to Newcastle Farmers' Club, March 6th 1852, L. & P. Bolbec. N630.6/2.

parish of Gosforth, said by Young to have been 16.5 bushels of wheat per acre in 1769, to have produced an annual average of 20 bushels per acre in 1801 and 23 bushels per acre in 1839. This accords with William Falla's evidence of 1821 that a similar, nearby area generally produced 24 bushels of wheat per acre.²³⁵ But if an area of good wheat land, close to an abundant supply of cheap, urban manure, was producing such relatively low yields, then most of the rest of Northumberland's soils must have been producing considerably less. In 1852, when Taylor supposed the area including Gosforth to produce 28 bushels of wheat per acre, he also claimed that 155,504 acres of the wheat-producing area of

²³⁵ F.M., 22, 1821, p.271.

Northumberland yielded over 20 bushels, but, a greater area, 170,061 acres, still yielded 20 or under. Hence it would appear that County yields, not just of wheat, remained low while vast areas of less productive soil were pressed into service, a process that was not halted or reversed during the first half of the 19th century (see pp.231-3). In 1859, Walter White eulogised the fine arable of Glendale and proclaimed that the Northumberland farmer, meaning the Glendale farmer, had within the previous ninety years increased oat yield from 15 bushels to 82 and wheat yield from 9 to 63 bushels.²³⁶ Such metaphorical mathematics can be misleading. No doubt exceptional farmers produced exceptional yields under favourable conditions, but the majority did not and would not until cereal cultivation on marginal land had been abandoned.

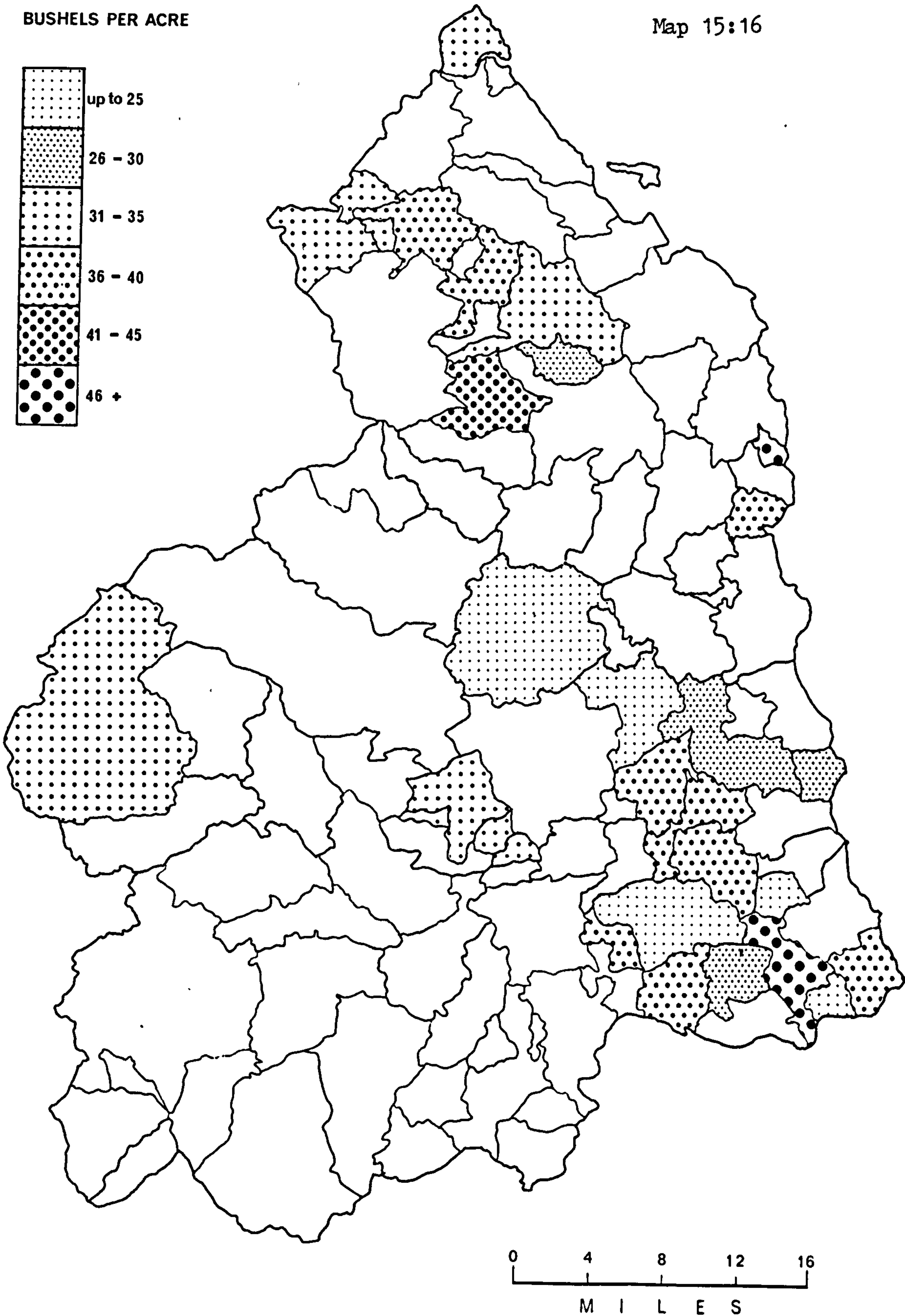
Some idea of County barley and oat yields can be gained by the same process and the results are shown on Maps 15:16, 15:17, 15:18 and 15:19 and Tables 15:9, 15:10 and 15:11. Young's figures for oats and barley were even more optimistic than those for wheat, but there does seem to have been a genuine increase of about 25% in barley yield between 1795 and the middle of the 19th century and perhaps a similar increase in oat yield. That this increase was largely due to improved returns from the heavier arable lands in the County, those marked 1 and 2 on Taylor's map, is suggested by Table 15:12, comparing yields in his five agricultural districts with actual yields for as many parishes as will fit into his divisions and which gave crop yields in the 1801 Returns. Smallest increases and even reductions in yields would appear to have taken place in the uplands (area 5), especially in oats, and in the high-yielding area 4 in the north. The generally poor soils of area 3 recorded only slight increases or actual declines in all three grain crops.

The conclusion derived from these figures is that a situation existed in Northumberland throughout the second half of the 18th century

²³⁶ Walter White, op.cit., p.213.

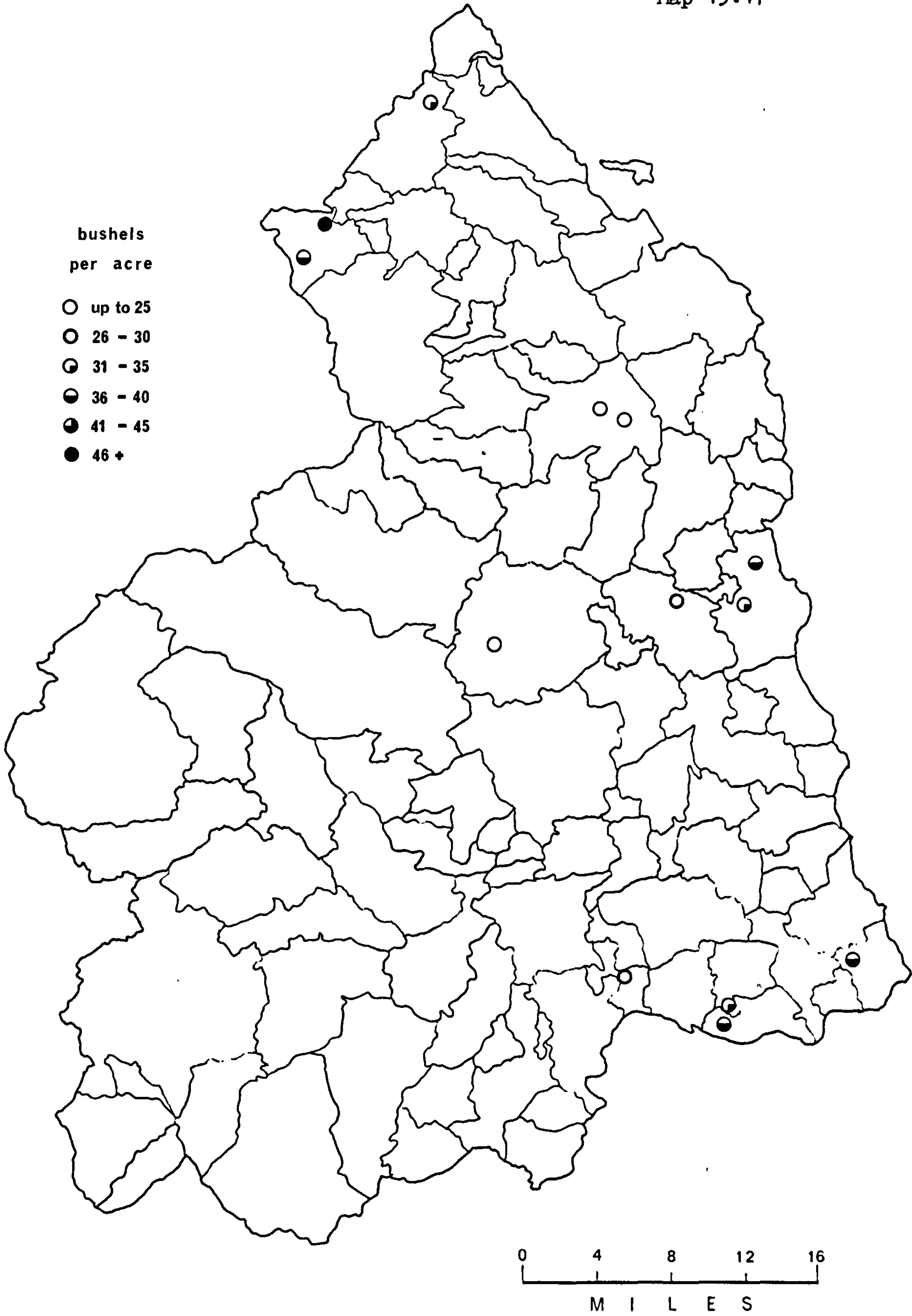
BUSHELS PER ACRE

Map 15:16



Parish Barley Yields, 1801.

Source: 1801 Crop Returns, PRO/HO/67/8.

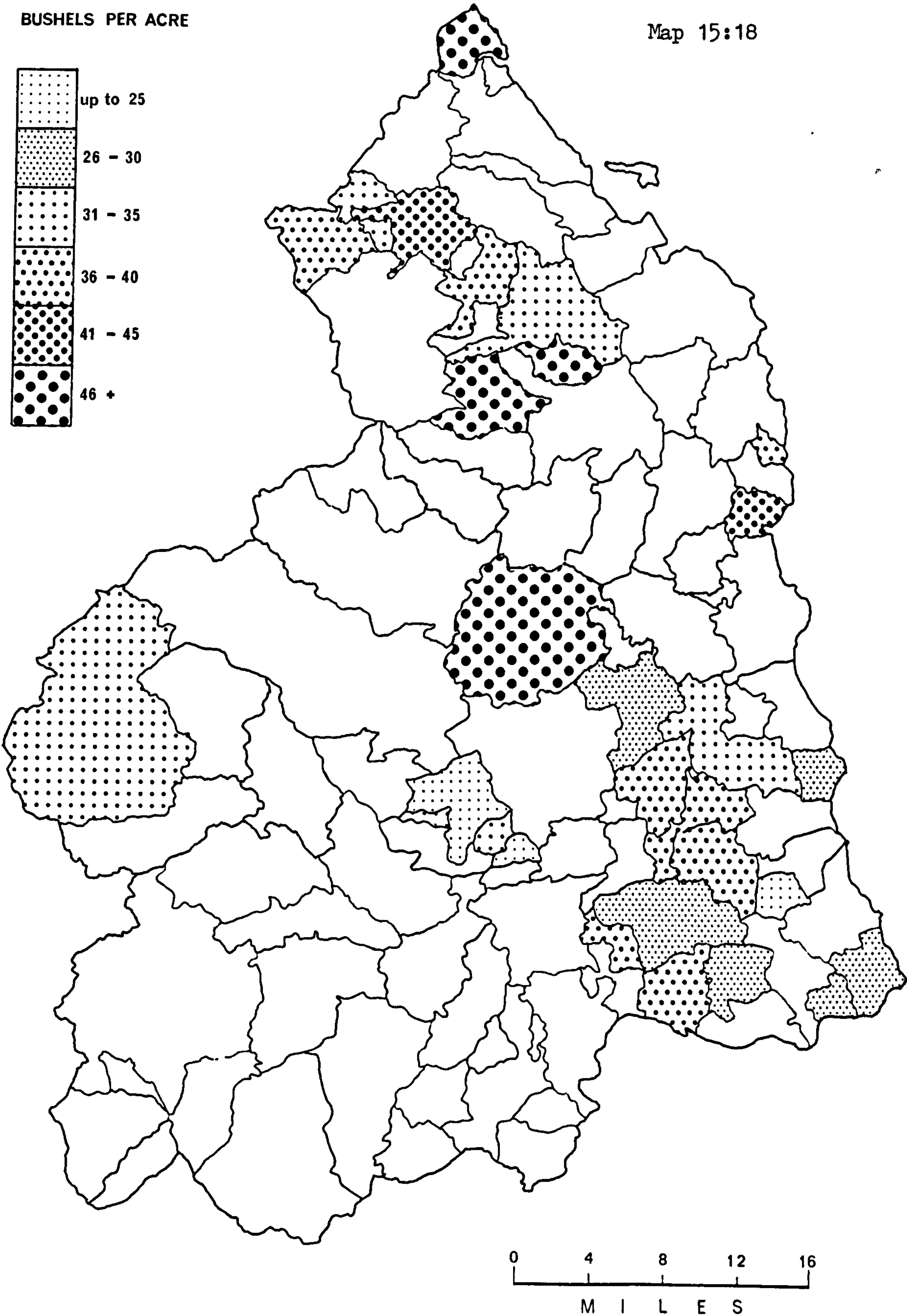


Township Barley Yields, c.1840.

Source: Tithe Files, PRO(A)/IR/18.

BUSHEL PER ACRE

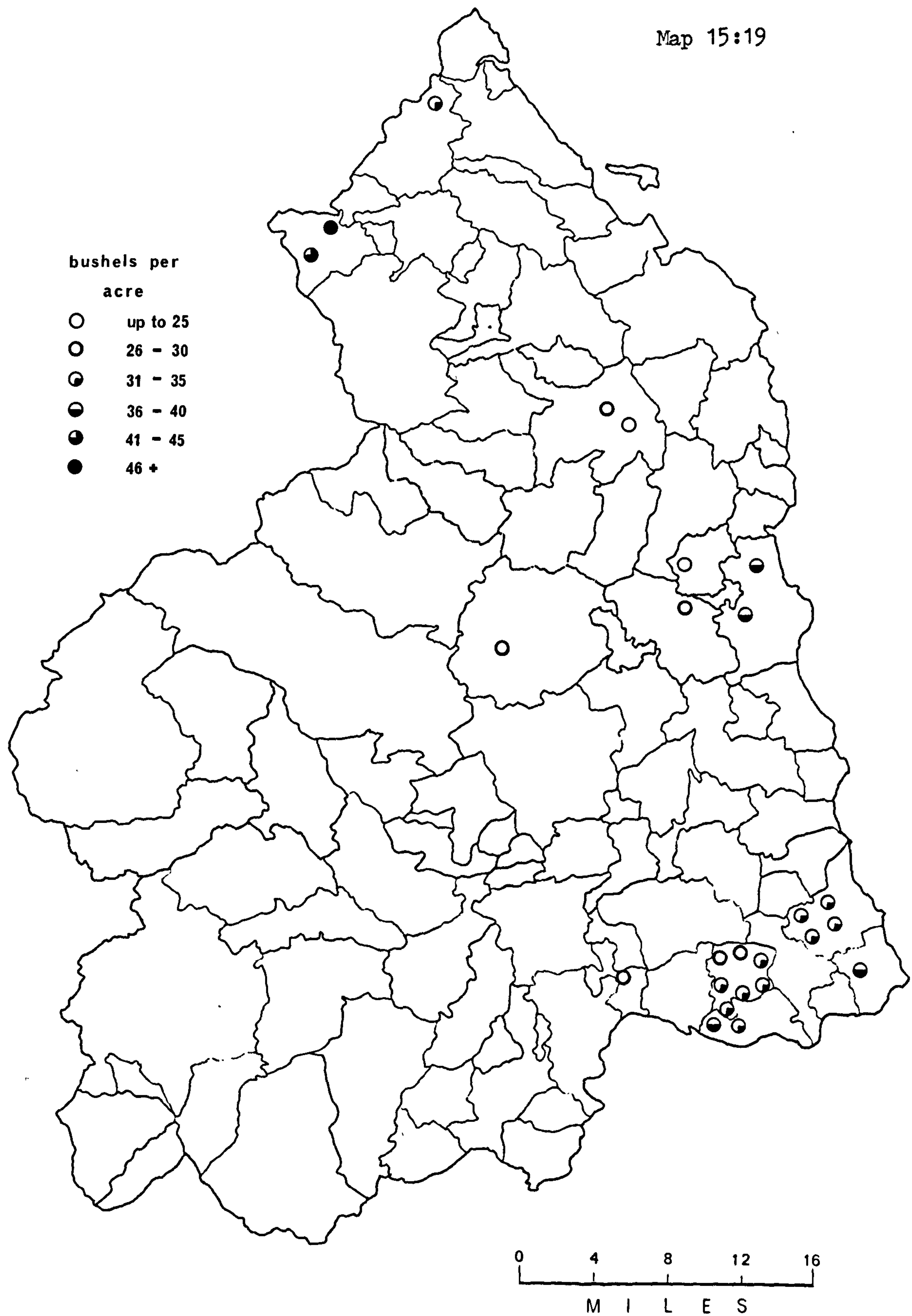
Map 15:18



Parish Oat Yields, 1801.

Source: 1801 Crop Returns, PRO/HO/67/8.

Map 15:19



Township Oat Yields, c.1840.

Source: Tithe Files, PRO(A)/IR/18.

Table 15:12

Comparison of Crop Yields 1801-1852 by Taylor's
Agricultural Regions

	1 8 0 1			1 8 5 2		
	1801 Crop Acreage	1801 Produce Bushels	Actual 1801 Yield Bushels Per Acre	Adjusted to Normal Yields Bushels Per Acre	Estimated 1852 Crop Acreage	Estimated Yield Bushels Per Acre
1.Wheat	7603	187258	24.6	20.5	26000	28
Barley	3541	129757	36.6	30.5	6500	40
Oats	11383½	452701	39.8	33.2	20084	44

1801 figures Carham, Branxton and Cornhill, Howick, Lesbury, Woodhorn, Morpeth, Mitford, Cramlington, Tynemouth, Wallsend, Longbenton, Gosforth and Newburn Parishes.

2.Wheat	2043	38189	18.7	15.6	12500	20
Barley	590	17640	29.9	24.9	2500	30
Oats	2979	92244	31.0	25.8	15000	34

1801 figures from Ponteland and Stannington Parishes.

3.Wheat	2847	61422	21.6	18.0	7500	18
Barley	469	11246	24.0	20.0	1000	26
Oats	3619	111322	30.8	25.7	10000	28

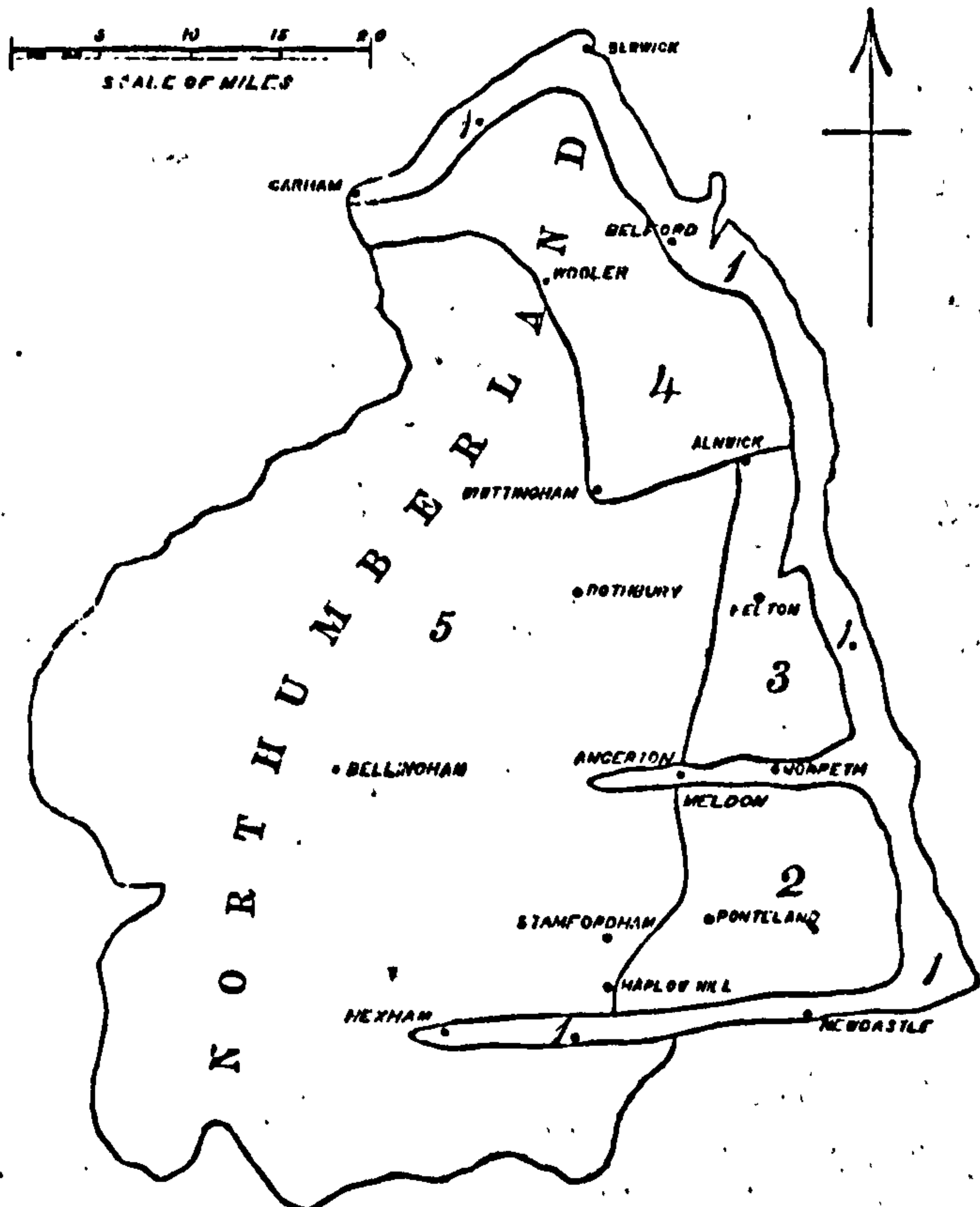
1801 figures from Hebburn and Bothal, and Longhorsley Parishes.

4.Wheat	2559	76596	29.9	24.9	6500	24
Barley	1533	52728	34.4	28.7	10500	30
Oats	3912	152488	39.0	32.5	17158	36

1801 figures from Ford, Chillingham, Doddington and Chatton Parishes.

5.Wheat	640	10776	16.8	14.0	10000	15
Barley	1371	41648	30.4	25.3	20000	28
Oats	3150	132496	42.1	35.1	35000	26

1801 figures from Ilderton, Rothbury, Kirkwhelpington, Kirkharle and Falstone Parishes.



Sources:

- 1801 Crop Returns,
PRO/HO/67/8
- Hugh Taylor's Estimates,
NCRO/ZHE/34/1.

in which some of the best grain yields were to be obtained from previously virgin or little used, but heavily manured soil, exploited in small patches in upland areas. Yields from lowland soil in regular arable rotation were probably more dependable, but generally very much lower. When the conditions of the late 18th century and of the Napoleonic Wars in particular made the production of more grain necessary and more profitable, demand was answered not by increasing yield, but by growing the more profitable grains, by breaking rotations, by putting more temporary or semi-permanent pasture into tillage as well as by an increase in total arable acreage (see pp.200-33). These measures were much more likely to have produced a decline in yield per acre than an increase. Reduced grain prices during the first half of the 19th century had the effect not of throwing arable land into pasture, but of encouraging maximum grain production to compensate with quantity for low prices. The consequent gradual exhaustion of many soils, particularly in central Northumberland, can only have had the effect of reducing grain yield even further. Certainly, on the strong arable soils of the coast and south-east, the good wheat land, more and better manures, improved rotations, improved seed and farming techniques, and eventually drainage, did increase yields throughout the period 1750-1850. Table 15:12, the Gosforth yields and even Young's inflated figures for the coastal area lead to this inevitable conclusion and this accords with evidence of increased wheat yields from good arable land further south in England.²³⁷ But most of Northumberland was not good wheat land or even good grain land and the massive grain acreage of the mid-19th century, occupying as it did a great deal of inferior land, was not generally conducive to an increase in yield.

237. M.J.R. Henly and E.L. Jones, 'Wheat Yields in England, 1815-59', *Journal of the Royal Statistical Society*, series A, 125, 1962, pp.574-9.

XVI

DRAINAGE

Though the removal of excess water from the soil had long been regarded by farmers as desirable, even as "the foundation of all other improvements",¹ there seems to have been little attempt to apply specialized draining methods in 18th century Northumberland. Bailey and Culley stated in the two short paragraphs that they devoted to the subject, that the improvement had only recently made its way into the County and was then restricted to the northern and middle parts.² They regarded hollow drains as the most advantageous and recommended surface drains - "a foot wide, and six or eight inches deep" - only for sheep farms, not arable concerns.³ Hollow drains were great wedge-shaped trenches, some 4 or 5 feet deep, 2 feet wide at the top, narrowing to 1 foot at the bottom, filled with stones or brushwood and capped with soil and turf. Refinements, such as an arch of stone slabs or turves to allow a freer flow of water at the bottom of the trench, were sometimes added.⁴ Such drains were constructed in Northumberland,⁵ but at about 10/- a rod (7 yards),⁶ or perhaps £30 per acre,⁷ they were very expensive. Consequently, although it was often recognized that draining was needed, relatively little interest was shown in executing the work.⁸

An alternative draining method was that devised by Joseph Elkington in 1764 by which vertical bore holes were sunk through impervious strata

1 James Donaldson, *Modern Agriculture*, 1796, 4, p.39.

2 Bailey and Culley, 1805, p.128.

3 Ibid., 1805, p.188.

4 A diagram of such a drain c.1810 is to be found in NCRO/ZHE/34/8.

5 William Todd to George Silvertop concerning the draining of Barlow Hill on the Minsteracres estate, April 20th 1807 and May 27th 1809. MNCRO/ZCO/9/1.

6 NCRO/ZHE/34/8.

7 John Housman, *A Topographical Description of Cumberland, Westmorland, Lancashire and a part of the West Riding of Yorkshire*, 1800, p.156.

8 "We have here occasion to regret that the new method of draining practised in the south, is not understood in this part of the country, as some of the land on this farm, would be much improved by it." Buteland, near Hexham, 1805 Greenwich Hospital Report. NCRO/NRO/467/4/2. John Morton,

to produce the controlled release of underground springs.⁹ Such a system was of use only in specialised conditions and but one example of its implementation in Northumberland has been found, at Shipley North Side North Farm in 1812.¹⁰ It is clear from other sale and letting advertisements in the Newcastle Courant that much of the earliest drainage was of the less expensive surface kind.¹¹ That such drainage was generally restricted to pastoral areas is quite clear from Map 16:1 showing the location of all those farms where drainage was advertised as having been carried out during the period up to 1840. There is little evidence of drainage having taken place in predominantly arable areas along the Coast or Tyne Valley, and the heavy land of the south-east, most in need of drainage, remained relatively untouched. John Naismyth had proclaimed these small open surface drains "about eighteen inches wide, and fourteen or fifteen inches deep, slanting across the declivity" to be common on the Cheviots in 1797,¹² and this was apparently still the only sort of drainage employed in the region in 1848.¹³ Such drains could last up to 20 years, provided dry paths for sheep and were said to increase the annual value of the herbage by some 500 per cent.¹⁴ Main drains were sometimes very much deeper,¹⁵ but fear of losing sheep in them during snow storms¹⁶ may have discouraged the construction of many of these.

Cyclopaedia of Agriculture, 1855, 1, p.670 suggested this draining method had spread to the North from Essex and an advertisement from a draining contractor in the Newcastle Courant of Feb.18th 1832 suggests that even then this was still regarded as a southern practice.

9 See John Johnstone, An Account of the Most Approved Mode of Draining Lands, 1797.

10 N.C., Oct.24th 1812.

11 See for example, Pundershaw, Simonburn and Chartners, Rothbury, N.C., Jan.2nd 1813 and Feb. 1st 1817.

12 John Naismyth, A.A., 27, 1797, pp.181-2.

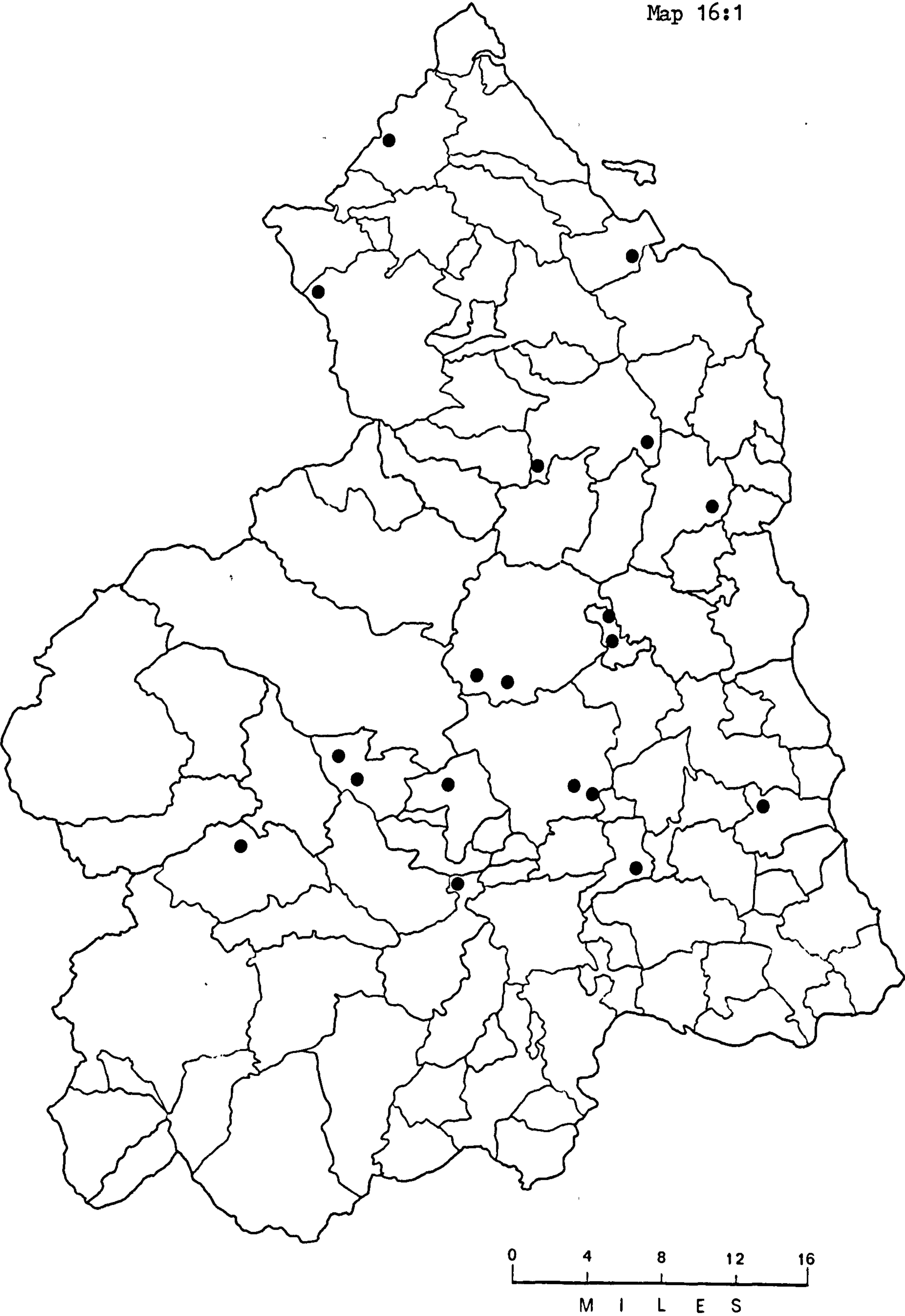
13 Mr. Henderson to Wooler Farmers' Club. J.N.A.S., 1848, p.5-6.

14 Thomas Lawson, 'Drainage of Hill Farms', paper read to Argyll, Bute and Western Isles Farmers' Club, c.1850. NCRO/ZHE/34/8.

15 Walter White "plunged up to the middle in a deep drain" a mile or more long in Girdle Fell, near Kielder. Walter White, Northumberland and the Border, 1859, p.354.

16 John Mitford to Walter Trevellyan, Nov.5th 1798. NCRO/ZTR/23/6.

Map 16:1



Drainage Operations Reported up to 1840.

Source: Newcastle Courant to 1840.

A later and cheap method of creating shallow, open drains was by means of a draining plough. A competition was held in 1842 by the owners of the Team Colliery to find the best design of plough able to "turn out a Furrow not less than 10 Inches in Width, and 12 Inches in Depth, the Sod to be laid clean on the Side".¹⁷ Various other plough types, such as trenching ploughs, water-furrow ploughs and subsoil ploughs, could be used to encourage drainage, but newspaper stock sale advertisements mention few such implements. The first of the nineteen which appeared in the Courant before 1850 was in 1827, and twelve of these were associated with the heavy soil of the south-east of the County (see Map 16:2). Mole ploughs were advertised as early as 1809,¹⁸ but there is no direct evidence of any being used in the County before 1850.

The expense of effective drainage and the ineffectiveness of inexpensive drainage on arable land meant that little interest was taken in the operation in the early 19th century. The traditional method of draining arable and even much pastoral land, by means of ridge and furrow, continued¹⁹ and was still being spoken of as a suitable alternative to under-draining in 1865.²⁰ Northumberland farmers apparently strenuously opposed the levelling of old ridges even after thorough draining had been carried out, especially on clay land, where subsoil strata had come to follow the curvature of the ridges.²¹ Mr. Scott of Beal, said to have been the first man to use thorough draining in the North of England,²² insisted on maintaining his ridges,²³ and instructions to draining

17 N.C., Oct. 7th 1842.

18 N.C., May 13th 1809.

19 The best account of the drainage value of ridge and furrow is in Sir John Sinclair, Code of Agriculture, 1817, in F.M., 19, 1818, pp.82-5.

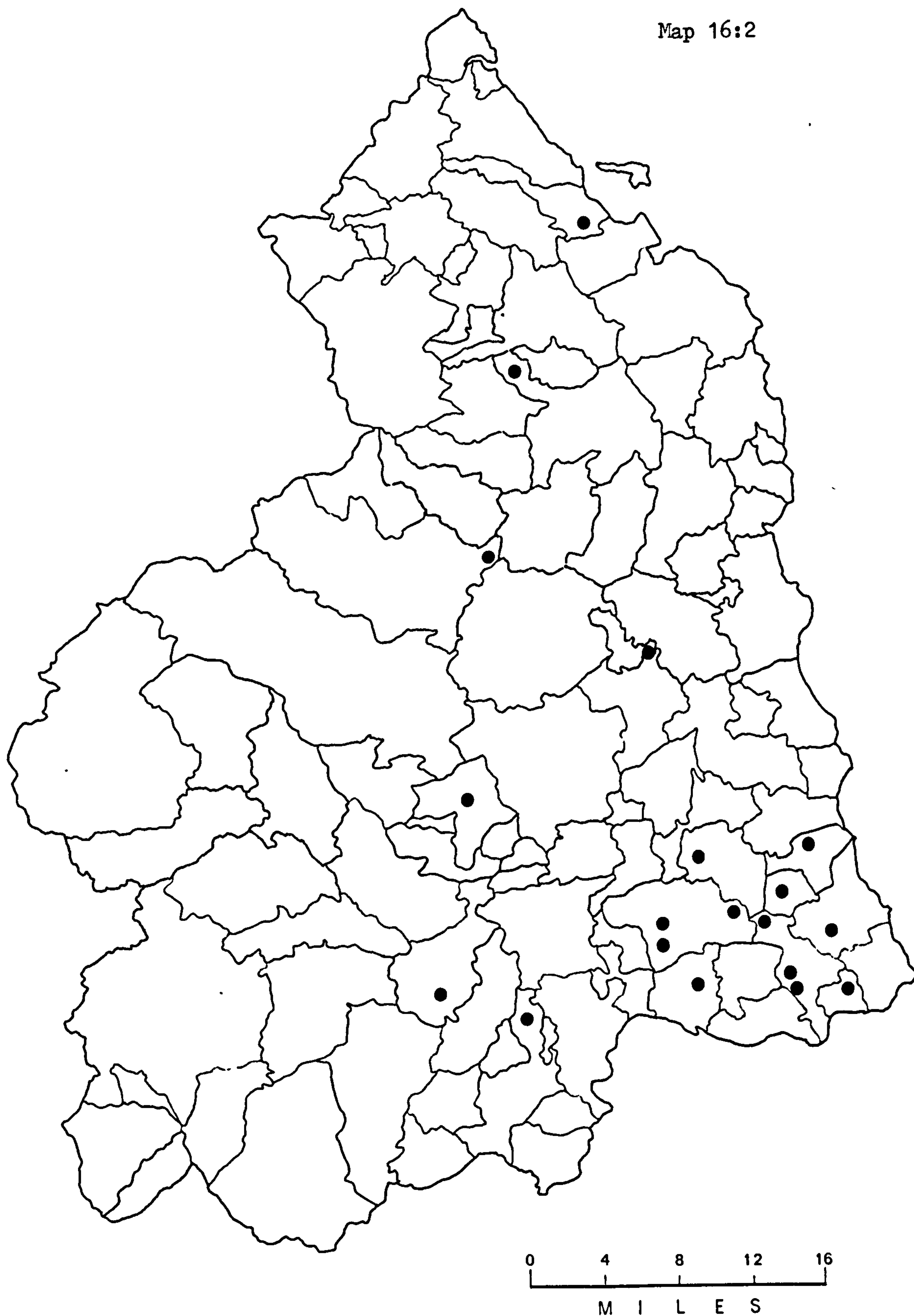
20 Thomas Lawson, 'The Conversion of Poor Arable Land into Grass Pasture', paper delivered to North of England Chamber of Agriculture at Morpeth, 1865, in Seymour Bell, Collections Relating to Agriculture. CL/L630.

21 The Times, Nov.28th 1851.

22 Prof. John Wilson, Newcastle Daily Chronicle Reprint, July 1864, p.11, in NCRO/ZSW/Add.& Misc. dated Capheaton Office, Sept.1st 1864.

23 The Times, op.cit.

Map 16:2



Distribution of Draining Ploughs up to 1850.

Source: Newcastle Courant Farm Stock Sales
Advertisements to 1850.

superintendants on the Duke of Northumberland's estate in 1848 stressed that such ridges on newly-drained clay soil were to be levelled only very gradually at every fallow.²⁴ Ridge and furrow had acted, inasmuch as anything could, as the farmer's insurance against his greatest enemy, the weather.²⁵ In dry seasons, the furrows would, it was hoped, provide moisture enough for herbage or crop: in wet, the ridges might be dry enough for stock to graze and plants to grow.²⁶ Indeed, as long as the ploughman ploughed with a fixed mouldboard, ridge and furrow was almost inevitable without regular and frequent cross-harrowing.²⁷ Consequently there may have been some intuitive suspicion of new draining methods; even as late as 1858, when the benefits they conferred must have been obvious to all, "there were occupiers of land in Northumberland who positively objected to having their land drained, upon the simple principle that 'it took the natural sap out of it'".²⁸ More general was the opinion expressed by C.S. Bell, one of the foremost land agents in the County, that the most modern drainage worked best in conjunction with traditional ridge and furrow.²⁹

The first advertisement for draining tiles appeared in the Courant in 1829.³⁰ The tiles, about 14 inches long, 3 to 7 inches tall, 2 to 5 inches wide and U-shaped in cross-section, were designed to fit on a flat sole at the bottom of the trench and to offer a much freer passage for water than the older stone drains. Although tile drains were much cheaper than stone, and became cheaper still with the improvement of tile-making machines,³¹ there were several obstacles to their efficient

24 NCRO/ZHE/34/8.

25 E.L. Jones, *Seasons and Prices*, 1964, *passim*.

26 "Charlton intends cutting that part of the Link field at South farm which is clover the beginning of the week, the mid-riggs are pretty good but the furrows & rig-sides has failed." John Bryers to Sir John Delaval, July 5th 1783. NCRO/2DE/4/20/53.

27 See T. Hennell, *Change in the Farm*, 1934, pp.60-2.

28 President of Newcastle Farmers' Club, Feb.5th 1858. L. & P., Bolbec, N630.6/3.

29 C.S. Bell to Hugh Taylor, Jan.20th 1862. Seymour Bell, *Collections Relating to Agriculture*. CL/L630. See also J. Bailey Denton, *Agricultural Drainage*, 1883, pp.24-5.

30 N.C., Jan. 3rd 1829.

31 J.C.Morton, *op.cit.*, 1855, 2, p.977.

operation. The drains were often blocked by vermin or by invading roots and growths and there was great temptation on grounds of economy to lay the tile without the sole, which could result in the tiles becoming totally imbedded and useless.³² The Duke of Northumberland had been forced to issue specific instructions in 1844 that his tenants were not to use tiles without soles.³³ But perhaps the greatest difficulty associated with the draining tile was determining the depth at which it was to be ~~laid~~ ^{laid} ~~laid~~. The system of James Smith of Deanston of laying drains no more than 24 or 30 inches deep was generally in vogue until challenged by that of Josiah Parkes in 1843.³⁴ Parkes recommended draining at not less than 4 feet and allowing a much greater distance between parallel lines of drains.³⁵ The situation in Northumberland was no doubt similar to that in Cumberland, where "About 1835 the mania for shallow draining began to exhibit itself, and soon arrived at an absurd pitch. The depth was gradually lessened to 20 inches, and even to 18 and 16 inches... The rapidity with which these shallow things could be executed led people to try it who ought to have known better; and after it had been practised for a few years, the discovery began to be made that an immense expenditure had been incurred, and a great deal of harm done".³⁶ The natural reaction was to the opposite extreme, the 5-foot drain originally advised by Parkes.³⁷ Preoccupation with theory³⁸ sometimes resulted in a situation

32 Peter Laws, 'On the Draining of Clay Lands', Aug. 1850. NCRO/ZHE/34/8.

33 Printed circular to Duke of Northumberland's tenants, July 1844. NCRO/ZHE/34/8.

34 Article by J.E., Newcastle Daily Journal, 1862. NCRO/ZHE/34/7. J.R. Wood, Farming on Tweedside, 1930. NCRO/NRO/302/79.

35 Josiah Parkes was enlisted in 1848 to supervise draining operations on the Duke of Northumberland's Estate. He drained much of the Duke's land at 4 feet with from 18 to 50 feet, depending on soil conditions, between drains. Reports headed 'Mr. Parkes' system of draining, 1848' and 'Draining Jany 28th 1850'. NCRO/ZHE/34/8.

36 William Dickinson, 'The Farming of Cumberland', J.R.A.S.E., 13, 1852, pp. 286-7.

37 Ibid.

38 "I often wonder at the tenacity with which drainers hold to their favourite systems of deep or shallow draining, as if either system would serve as a fixed rule, to be alike suitable in every locality and under every circumstance." Thomas George Bell, 'A Report upon the Agriculture of the County of Durham', J.R.A.S.E., 17, 1856, p. 94.

in which farmers reaped smaller returns than they had done before drainage,³⁹ and often necessitated expensive re-draining of land.⁴⁰

The invention in the 1840s of machines to make drainage pipes, not only meant a cheaper alternative to the tile and sole, but also that the temptation to omit the sole was avoided. Pipes used as an alternative to horseshoe tiles and soles on the Duke's estate in 1848 cost 12/- per thousand as opposed to 21/- for the tiles and soles,⁴¹ and of the eight bailiffs who answered the Duke's circular on drainage in 1847, seven preferred pipes to the common tile and sole, mainly because they cost less.⁴²

Drainage was an improvement normally directed and ~~payed~~^{paid} for by the landlord with the tenant providing the leading or paying usually 5% of the total cost of draining as an addition to his rent. Walter Riddell had tried to make his tenants at Hepple pay half the drainage cost,⁴³ and the Northumberland Agricultural Society had attempted a facile plan in 1838 by which the tenant who had drained most land at his own expense would be awarded £10 from the purse of Lord Prudhoe.⁴⁴ Sir Charles Monck charged his tenants at Belsay 7%,⁴⁵ which was high. Monck was perhaps typical of the landlord who did not really understand the significance of this or any other improvement. In 1853 he had announced that there were two kinds of drainage - landlord and tenant. "All which was done at less than 4 feet depth he considered tenants drainage and left it to them."⁴⁶ In 1859, he claimed that he had never drained at less than four feet and

39 The Editor, J.N.A.S., June 15th 1850, p.vii.

40 Mr. Bell's estate at Woolsington, Mr. Ogle's at Kirkley and Mr. Cole's at Middleton all had to be re-drained. Prof. John Wilson, Newcastle Daily Chronicle Reprint, July 1864, pp.3-5. NCRO/ZSW/Add. & Misc. dated Capheaton Office, Sept.1st 1864.

41 NCRO/ZHE/34/8.

42 NCRO/ZHE/34/3.

43 Survey and valuation book, 1819. NCRO/ZRW/301.

44 N.C., March 23rd and May 25th 1838.

45 Rent Day Speech, Nov. 25th 1847. NCRO/ZMI/B41/7.

46 Report of Rent Day Speech, Dec.1st 1853. NCRO/ZMI/B41/7.

that this had enabled his tenants "to extend the growth of turneps and improve the cultivation generally",⁴⁷ and in 1862 that he continued to drain as fast as he could meet the cost.⁴⁸ This could not have been too difficult as he had adopted a policy in 1854 of charging a new higher rent immediately land had been drained.⁴⁹ As for his deep draining, he too had started by insisting on the Deanston system,⁵⁰ presumably to his and his tenants' cost.

The Drainage Acts of 1846 and 1849 made funds available for landlords⁵¹ and Land Draining Associations were advertising to lend money from 1844.⁵² The cost of operations depended largely on the consistency of the soil and therefore how far apart the drains would have to be laid. Retentive clay mixed with stones and requiring four-foot drains 27 feet apart cost £5.17.0 per acre in 1849, but gravelly clay with sand needed the same four-foot drains only 36 feet apart and cost just £3.10.0. per acre.⁵³ The 920 acres drained by Mr. Parkes on the Duke of Northumberland's estate up to September 1849 cost an average of £4.6.8 per acre: the 230 drained between then and January 1850 cost less - £4.1.9 per acre - as a consequence of the replacement of soles and tiles by pipes.⁵⁴ In 1844 the Duke had authorized the annual expenditure of £6,000 in the draining of his estate,⁵⁵ but the estimated annual expense of draining in only seven of the twelve bailiwicks had already reached £8,306 by 1847.⁵⁶ The benefits derived from drainage were estimated in 1850 to be, on good soils,

47 Report of Rent Day Speech, Dec.1st 1859. NCRO/ZMI/B41/7.

48 Rent Day Speech, May 1st 1862. NCRO/ZMI/B41/7.

49 Rent Day Speech, Nov.30th 1854. NCRO/ZMI/B41/7.

50 Rent Day Speech, Nov.23rd 1841. NCRO/ZMI/B41/7.

51 See Robert J. Thompson, 'An Inquiry into the Rent of Agricultural Land in England and Wales during the 19th Century', Journal of the Royal Statistical Society, 70, 1907, pp.593-4; and N.C., Sept.13th 1850.

52 Advertisement of the Yorkshire Land-Draining Association, N.C., Feb. 16th 1844.

53 'On Draining Clay Soils' in Seymour Bell, Collections Relating to Agriculture. CL/L630.

54 Report to Duke of Northumberland headed 'Draining Jany 28th 1850'. NCRO/ZHE/34/8.

55 Printed circular, July 1844. NCRO/ZHE/34/8.

56 Printed circular, Nov.1847. NCRO/ZHE/34/3.

"increased produce of Wheat 6 or 7 Bushels, of Barley 9 or 10 & of Oats 10 or 11 on loamy Soils with an impervious subsoil the increase may be stated of Wheat 4 or 5 Bushels, of Barley 6 or 7 & of Oats 7 or 8 per acre".⁵⁷ Draining was claimed to double the yield of turnips on heavy ground,⁵⁸ but, more important, made the growth of turnips feasible on land where their cultivation would not previously have been attempted (see p.224-6).

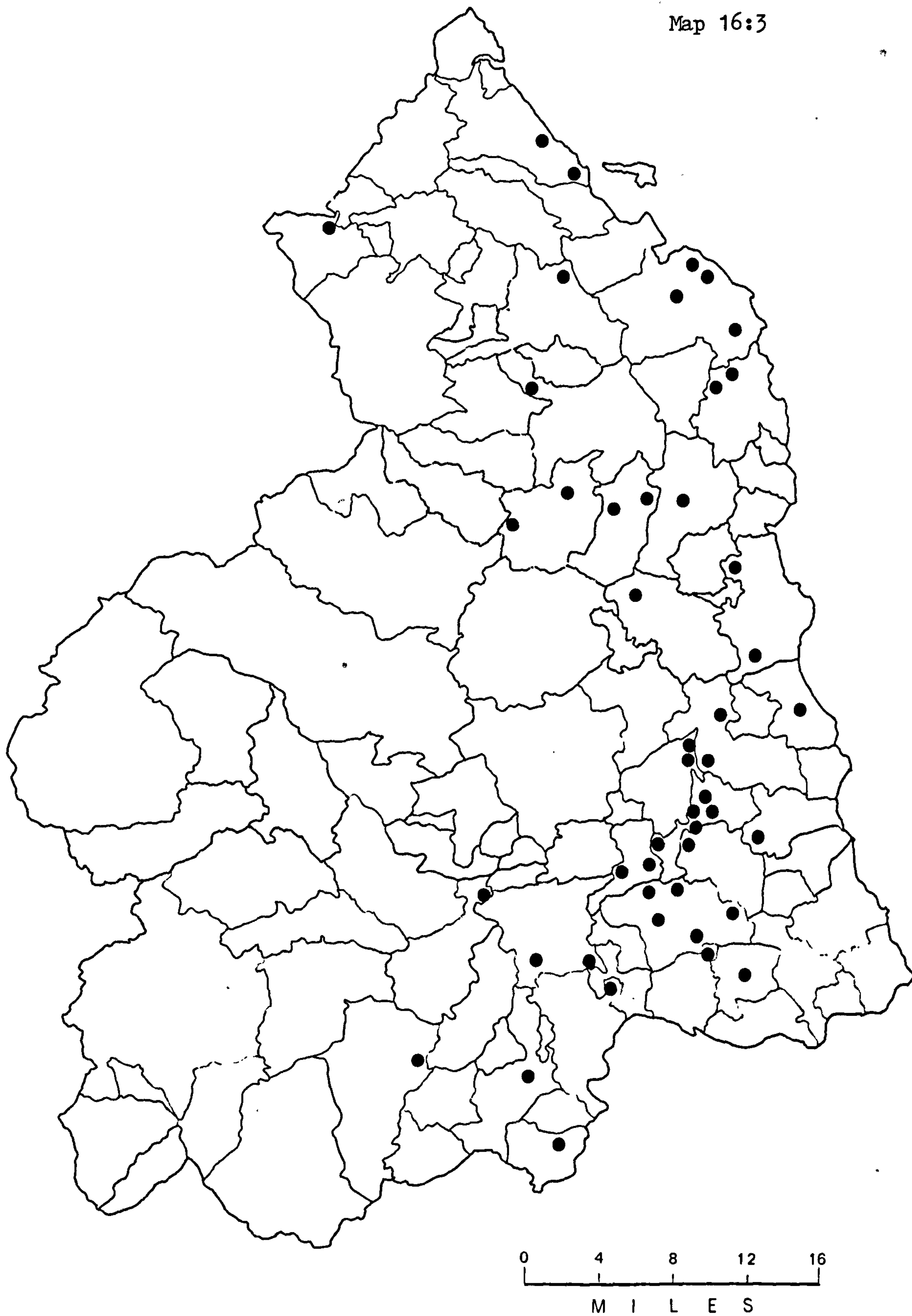
The development of drainage on arable land, after 1840, particularly the heavy lands of the south-east, is clearly shown on Map 16:3 of those farms advertised as having had drainage undertaken. The Map contrasts starkly with Map 16:1, which suggested that drainage operations had largely been limited to upland areas for the benefit of stock before this date. With adequate drainage, the clay farms could at last begin to compete with the 'sheep and turnip' farms of the north; "those long despised Lands, once drained Limed & subsoiled - will repay you better than any other lands & to them be not surprised Gentlemen we shall in future be indebted for the supply of wheat".⁵⁹ Map 16:4 shows the locations of townships specifically mentioned by the compilers of the Tithe Files as having been satisfactorily drained or as being in urgent need of draining in the early 1840s. Few areas of the County needed no more drainage and the heavier arable lands around Alnwick, Stamfordham and in central and south-eastern Northumberland in general were in particular need of treatment. The lighter soils of much of the north were easier and less expensive to drain. Of Bowsden, one of the few northern areas in special need of drainage, it was remarked that "The lands have been cultivated in an ordinary and average manner

57 Christopher Colbeck, Bailiff of Tindale, to Hugh Taylor. Enclosed with State of Farms Returns, 1850, Alnwick Castle, Middle Room, 4 large boxes on the right, 6 paces from the door.

58 Rev. Bosanquet, 'Turnips on Stiff Clays in Northumberland', J.N.A.S., 1847, pp.48-51.

59 Notes for speech on land drainage by M.C.Salvin c.1845. D/Sa/X/210.

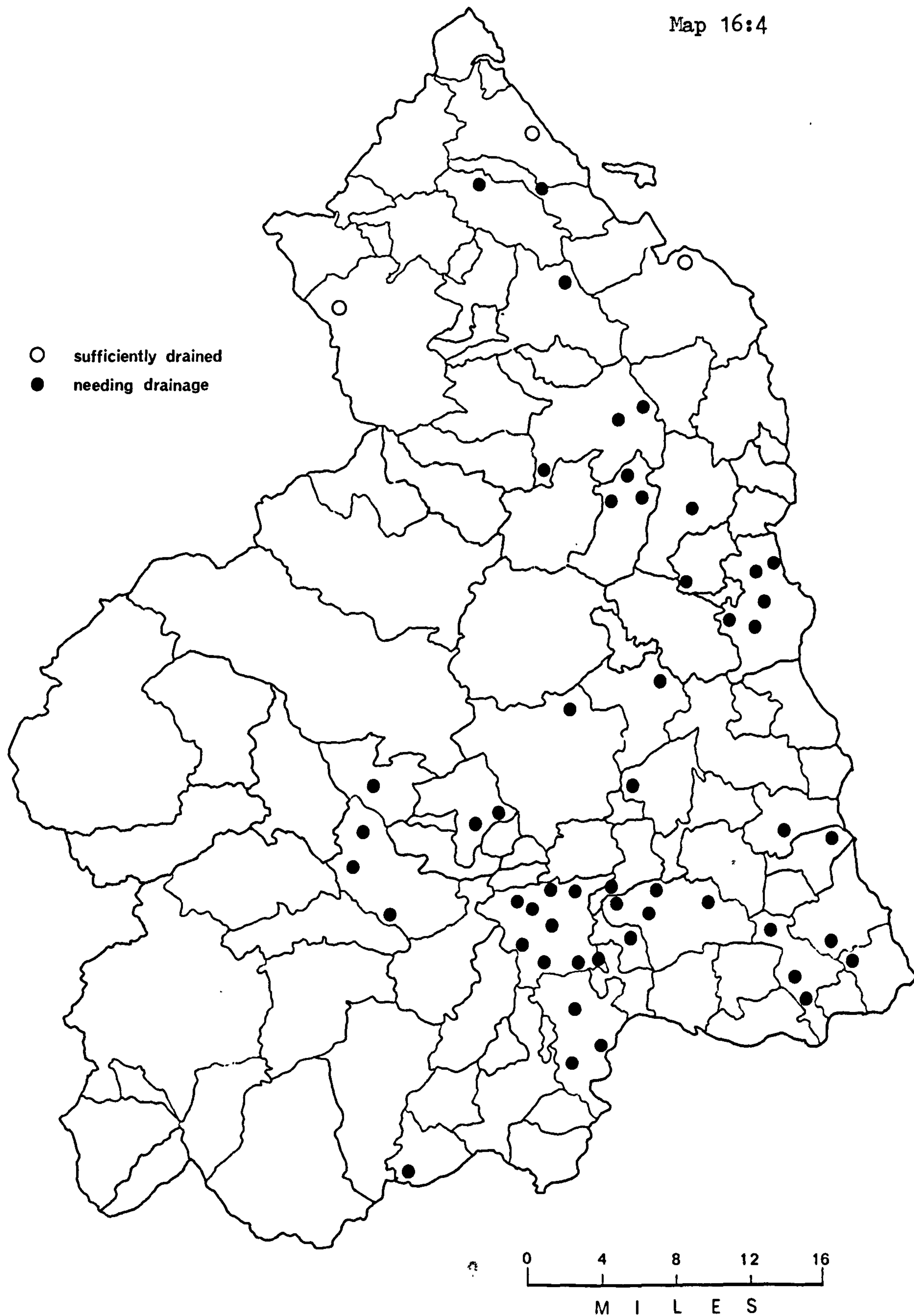
Map 16:3



Drainage Operations Reported, 1841-1850.

Source: Newcastle Courant, 1841-50.

Map 16:4



State of Drainage c.1840.

Source: Tithe Files, c.1840. PRO(A)/IR/18.

much in accordance with the usual system followed in this district of North^d but that the improvement by draining now and for some time past so generally and extensively practised in this District has in this Township as yet made little progress!"⁶⁰

It would seem that drainage in Northumberland had been almost totally restricted to lighter and higher lands in the early 19th century and that heavier land was very much neglected until the 1840s. The significance of the advent of drainage to the arable potential of strong clay lands has been discussed elsewhere (see p.354) as has its importance in the laying down to grass of thinner clay soils (see p.232). In that drainage did permit considerable changes in land use on the clays, it may be justifiable to claim that a minor agricultural revolution of sorts had taken place:⁶¹ it is less equivocal to claim that even if changes brought about by drainage on the clays were less than revolutionary, the speed with which drainage was introduced to heavier lands was not. Figure 16:1 gives some idea of the pace at which thorough drainage was adopted in Northumberland. Its sudden acceptance as a useful improvement after 1840 despite decades of familiarity with the basic techniques, was a product of the economy and efficiency possible through the invention of tile- and pipe-making machines, the ready availability of funds for landlords to embark on drainage operations, but mainly of a realization that under-drainage represented the best way of re-equipping heavier lands to face competition from an agriculture the overall efficiency of which was steadily increasing.

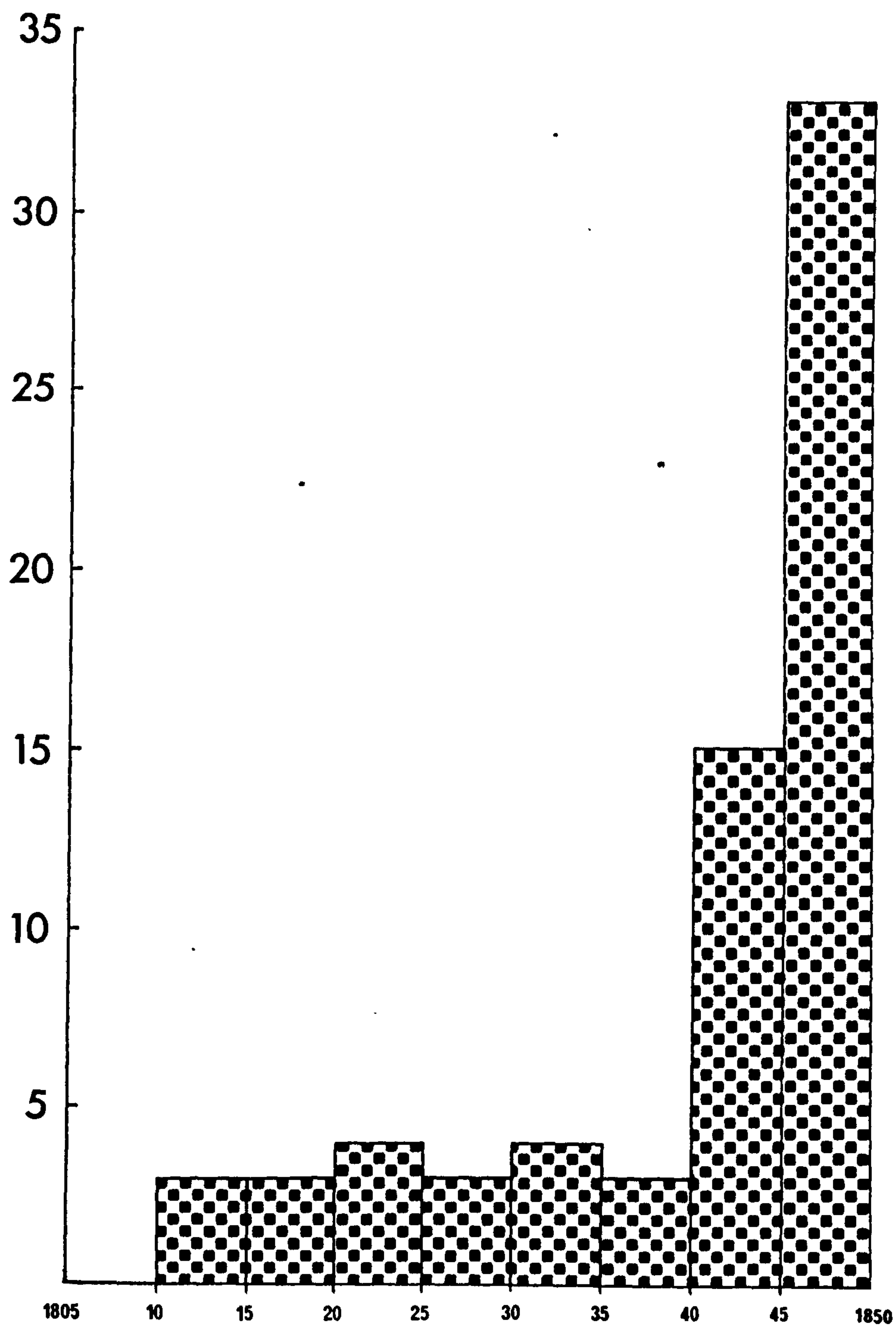
60 Bowsden, Lowick, Tithe File, Jan.21st 1846. PRO(A)/IR/18/6841.

61 See R.W. Sturgess, 'The Agricultural Revolution on the English Clays', Ag. H.R., 14, 1966, pp.104-21; 15, 1967, pp.82-7 and E.J.T.Collins and E.L. Jones, 'Sectoral Advance in English Agriculture 1850-80', Ag.H.R., 15, 1967, pp.65-81.

Figure 16:1

Number of Farms on which Drainage Reported in
Letting or Sale Advertisements

FARMS



Source: Newcastle Courant, 1805-50

XVII

MANURES

The dung of animals, mixed with straw, is what is commonly meant by manure and, indeed, this was certainly the sort most extensively used in Northumberland. But other manures, both natural and artificial, played a role of growing importance in the County in the century after 1750. Manures not only improved the fertility of the soil, but could also improve its texture. Without manures it would have been difficult to produce grain crops on many soils, even harder to reap high yields and almost impossible to raise such crops as turnips. It is not possible to trace the extent and the effectiveness of dung use. Except where vast quantities were said to have been wasted in areas where there were large stock numbers but little tillage, as was the case on some Cheviot farms in the early 19th century¹ and in Kirkhaugh in 1840,² it was a matter far too commonplace to arouse comment. Yet farm-yard dung was so precious in other parts of Northumberland that its preservation and augmentation were important arguments for the stall-feeding of cattle in winter and the housing of horses in summer.³ Other manures, particularly the new ones, used during this period have left more evidence of their impact. These provoked considerable interest and much extension of tillage, improvement of yield and increased cultivation of some crops was attributed to their efficacy.

Paring and burning, the method by which the turf was sliced from old pastures or rough heath land, burnt and the ashes spread about the land as manure before tillage, was extensively practised in the 18th

1 Bailey and Culley, 1805, pp.130-1.

2 John Hodgson, History of Northumberland, 1840, pt.2, 3, p.59.

3 F.M., 1, 1800, pp.402-4.

century in the southern and western parts of Northumberland though not in the east and north.⁴ The system had many opponents who complained that the bulk of the soil was diminished by sod-burning, but this was not its main weakness. Paring and burning not only broke up the land, but also made the soil more friable and deposited a layer of fertile humus ash on land that had not recently, or perhaps had never produced corn crops. The result was luxuriant crops for the first year or two, encouraging the injudicious cultivator to take as many crops as he could before being defeated by plummeting yields and exhausted soil. Paring and burning thus became almost synonymous with over-cropping and bad husbandry and was regarded with the utmost suspicion by the improvers.⁵ Arthur Young suggested in 1770 that paring and burning was a system of cultivation rapidly going out of favour in many parts of Northumberland⁶ and George Culley had some difficulty in 1799 persuading his brother Matthew that it was the only possible way to bring mossy ground into cultivation.⁷

Certainly the process was often badly executed and abused. Sods were being allowed to moulder all winter and become virtually incombustible at Hetherslaw, in Ford, in 1781⁸ and it was being used at Seaton Delaval in 1795 to induce large cash crops of hay to alleviate financial embarrassment rather than as part of any policy of agricultural improvement.⁹ There can be little doubt that the very high crop yields reported in some unlikely highland areas of Northumberland in the 18th century were a consequence of paring and burning (see p. 202). The value of such a system to the farmer may be judged by the rent offered by a Mr. Barker

4 Bailey and Culley, 1805, p.128.

5 Ibid., pp.129-30; William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 1808-18, 1, p.39.

6 Arthur Young, Northern Tour, 1770, 3, pp.28, 41, 88, 105.

7 George Culley to John Welch, March 15th 1799. NCRO/ZCU/6.

8 Joseph Oxley to Sir John Delaval, Nov.18th 1781. NCRO/2DE/4/13/49.

9 Ibid., April 3rd 1795, NCRO/2DE/4/18.

for a farm at Doddington in 1812. For the right not even to pare but simply to burn heathland in a 21-year rotation, he was willing to pay £200 a year in addition to his £1600 annual rental.¹⁰ Whether paring were performed by breast ploughs, by improvised swing ploughs or special paring ploughs, both it and the burning and spreading process were heavily labour intensive. For this reason, gangs of labourers were sometimes hired to undertake the work,¹¹ and because a degree of expertise was needed in burning the sods,¹² specialist parers offered their services and were often contracted from a distance to work in Northumberland.¹³

Of greater importance to the 18th century farmer than even paring and burning was the application of lime to both grass and arable land. This had the physical effect of improving the consistency of both light and heavy soils and the chemical effect of helping to neutralise acidic soils, of adding valuable plant nutrients to the soil and of assisting the utilisation of those already in the soil.¹⁴ Common practice was to burn chalk or limestone in kilns to create quick lime which was then spread on the land in the ratio of between 75 and 150 bushels to 1 acre, either after paring and burning or in regular rotation.¹⁵ In Northumberland, many 18th century leases insisted that a set quantity of lime be applied every few years, a custom utterly condemned by Morton in 1855. "Anything more pernicious than such a system could scarcely be devised, because of the utterly exhausting action of lime when not accompanied by a more than ordinary generous treatment of the soil."¹⁶ Regular heavy use of lime, like paring and burning, allowed heavy cropping for a few years,

10 John Bailey to Earl Tankerville, Nov.29th 1812. NCRO/Tankerville Box 1/D/3 unsorted.

11 N.C., May 9th 1767, Aug.25th 1807, May 19th 1810, May 16th 1818.

12 J.C. Morton, *Cyclopedia of Agriculture*, 1855, 2, pp.559-60.

13 N.C., Jan.21st 1775; Joseph Oxley to Sir John Delaval, Jan.27th 1782, NCRO/2DE/4/14/6.

14 J.C. Morton, *op.cit.*, 2, pp.253-4; Thomas Colbeck, p.426; John Wallis, *The Natural History and Antiquities of Northumberland*, 1769, p.3.

15 Bailey and Culley, 1805, pp.131-3.

16 J.C. Morton, *op.cit.*, 2, p.254.

but unless it was accompanied by the application of considerable quantities of dung and the land allowed to lie in grass for some years, soil exhaustion was likely. Lime, it was said, enriched the father but beggared the son.¹⁷

The doubts entertained by Bailey and Culley about the usefulness of regular lime application on old arable¹⁸ were reiterated by the Scottish Reviewers of the Northumberland Agricultural Report. In 1800 they wrote, "We have often, however, viewed the Northumberland lime-husbandry, as little better than giving the land a snuff; and we do not wonder, 'that many intelligent farmers begin to doubt of its efficacy, and the propriety of continuing to lay it upon their old tillage lands'. In such situations, it is only throwing away money unnecessarily, to expend it upon the purchase of lime. Refresh the land with grass, and the operation may be profitably repeated".¹⁹ In other words, liming was no substitute for sound rotations and convertible husbandry. This seems to have been increasingly recognised in Northumberland leases of the 19th century. Although these generally retained the provision that all straw was to be used on the farm to be mixed with dung for manure, liming directions were rare by the second quarter of the century.

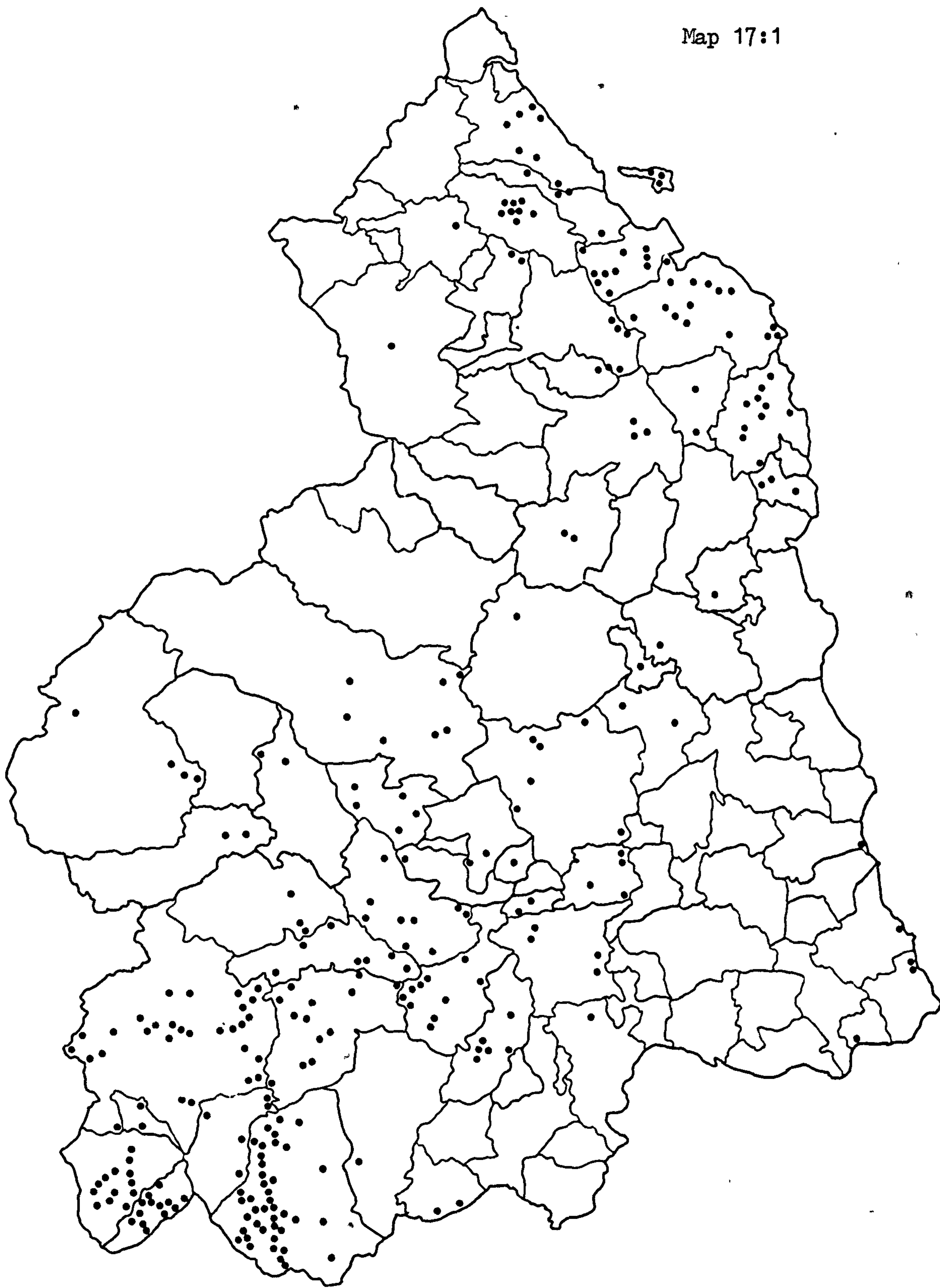
Map 17:1 shows all those lime kilns, both operating and defunct, marked on the first edition Ordnance Survey sheets of the County, surveyed between 1858 and 1864. It makes two points very clear: the absence of the raw material in all parts of the south-east except Whitley Bay and therefore the existence of kilns in this area only at those places where lime could be imported, and secondly the proliferation of lime kilns in the south-west. The suggestion is that this area was heavily dependent on lime as a manure and remained so in the mid-19th century when other parts of the County were turning increasingly to other manures. In the south-east, the

17 Cuthbert Johnson, *Modern Agricultural Improvements*, 1847, p.91.

18 Bailey and Culley, 1805, p.134.

19 F.M., 1, 1800, pp.425-6.

Map 17:1



0 4 8 12 16
M I L E S

Lime Kilns In Use or Defunct, 1858-1864.

Source: First Edition Ordnance Survey, 1865-6
(6 inches to 1 mile)

Whitley and Wallsend Lime Works held a virtual monopoly and lime was dear. In the north of the County, a fother of lime containing about 25 bushels sold for between 3/- and 4/6 in 1805;²⁰ between Walker and Newburn it cost 12/- in 1811 delivered on the River.²¹ The cost of liming was nearly always borne by the tenant. At Doddington in 1780, lime was bought from Berwick at 6d per boll at the kiln, brought back in two-horse carts each carrying 5 bolls and charging 5/- for the journey, and applied to the land at the ratio of 30 bolls (60 bushels or 3 tons) to the acre.²² Occasionally the landlord applied lime at his own expense, as when an allotment at Tosson, Rothbury, was advertised to be let in 1809 after it had been ploughed and limed at the rate of 10 cart loads (about 5 tons) of lime to the acre.²³

The absence of limestone between the Tweed and the Lothians occasioned considerable demand from Northumberland kilns near the Border. Complaints were made in 1780 that the freeholders of Wark had sold out to lime carters whose horses devoured other people's grass and whose carts ruined the road surfaces.²⁴ At St. Boswells, Jedburgh, it was remarked in 1794 that "The expence of improving with lime is great, as the lime must come either from the Lothian kilns, or those of the border of England... but this expence is many times repaid with interest, from the melioration of the land".²⁵ In Dunse, it was thought worthwhile bringing lime 15 miles,²⁶ in Earlstoun 22 miles,²⁷ and 20 miles from Elishaw in Elsdon to Jedburgh.²⁸ One of the greatest advantages of the new iron bridge built across the Tweed between Norham and Berwick was thought to be that it would facilitate the carriage of Northumberland lime into Scotland.²⁹ By the mid-19th century, lime was still recommended

20 Bailey and Culley, 1805, p.133. 21 N.C., April 6th 1811.

22 Notes, Dec.22nd 1780. NCRO/2DE/19/4.

23 N.C., Nov.11th 1809.

24 Robert Smart to Earl Tankerville, March 11th 1780. NCRO/Tankerville Box 4/C/8 unsorted.

25 Sir John Sinclair, Statistical Account of Scotland, 1794, 10, p.205.

26 Ibid., 1797, 4, p.392.

27 Ibid., 1797, 4, p.249.

28 N.C., Oct.2nd 1802.

29 F.M., 21, 1820, p.368.

for use after draining of heavy soils and as a top dressing for pasture.³⁰ Railway transport had both reduced its price and increased its availability in the south-east, but by this date, farmers in other parts of Northumberland were becoming disenchanted with the continual use of lime, and although lime remained an important manure, greater interest began to be shown in others.

Bailey and Culley did not mention the use of bones as a manure in Northumberland, but they were on sale to farmers in South Shields in 1795.³² In 1849 it was declared that, though no manure could replace farm-yard dung, "prepared bones, where sufficient manure cannot be obtained, [can be] applied with good results; and... are much preferable to the thousands of loads of lime which are wasted (though to a much less extent than formerly), by being applied as a fallow dressing...".³³ At between 1/6 and 2/- a bushel,³⁴ bones were a dear manure, but they possessed at least two advantages over lime. As Thomas Colbeck explained in 1847, "There is nothing on which our farmers have wasted so much money as lime, by applying it to old-going land. It is true lime is necessary for plants, but still it is only one of the substances required... Bones have also been very extensively used, and with more benefit... because they contain more of the substances required by the plants, particularly the phosphates, which are absolutely necessary to form the seed of our cereals".³⁵ The second advantage was that, being considerably lighter than lime, bones were "a manure that will be most useful to persons at too great a distance from towns, to lead other manure with advantage".³⁶

Newcastle seems to have early become a centre for the sale of bone manure. An advertisement of 1807 from a bone-manure manufacturer appealed

30 John Wilson, *Northern Farms and Farming*, 1864, p.4.NCRO/ZSW/Add.& Misc.

31 Ibid., p.5.

32 N.C., April 11th 1795.

33 William Glover to Newcastle Farmers' Club, Nov.3rd 1849. L.& P. Bolbec N630.6/2.

34 N.C., April 13th 1816, Feb.15th 1817, May 29th 1824.

35 Thomas Colbeck to Newcastle Farmers' Club, Sept.24th 1847. L.& P. Bolbec N630.6/1.

36 F.M., 16, 1815, p.330. See also N.C., April 15th 1815.

for the rich to throw their bones in places where the poor could find them to bring to him.³⁷ Bones - occasionally human - were imported at Newcastle from the Baltic,³⁸ broken into small pieces there and either used locally or delivered as far afield as East Lothian.³⁹ Ground bones also seem to have been delivered at Alnmouth for sale at Alnwick.⁴⁰ 'Half-inch' bones and dust were manufactured to be sown by drill along with the turnip seed,⁴¹ and it was claimed in 1847 that "the extensive application of bone manure has increased the quantity of acres under turnips to an amazing extent, and proved to be a most useful manure on all light lands".⁴² In 1833 it was suggested that bone manure might be equally beneficial to the Northumberland wheat crop, but it was clearly no more than an experiment in the 1830s.⁴³ Unlike lime, bones were used as a direct supplement to farm-yard manure,⁴⁴ but probably did not undergo the process whereby they were first immersed in sulphuric acid until the 1840s.⁴⁵

Some use was made of seaweed as a manure in the 18th century. Bailey and Culley wrote of it being gathered and left to putrify in large heaps before it was used.⁴⁶ Only one reference, in 1780, is known to the burning of seaweed to make kelp.⁴⁷ Seaweed seems to have been commonly used in coastal districts as a preparation for wheat,⁴⁸ and access to the

37 N.C., Dec.19th 1807.

38 N.C., July 10th 1824, Jan. 4th 1834.

39 F.M., 20, 1819, p.17.

40 N.C., April 19th 1839.

41 N.C., April 4th, May 9th 1829, May 17th 1834.

42 G.H. Ramsay to Newcastle Farmers' Club, March 6th 1847. L.& P. Bolbec N630.6/1.

43 N.C., Aug.31st 1833, July 12th 1839.

44 Evidence of G.H. Ramsay, Report of Select Committee on Agricultural Customs, 1848, p.195.

45 Ibid.; Thomas Colbeck to Newcastle Farmers' Club, Sept.24th 1847, L. & P. Bolbec N630.6/1.

46 Bailey and Culley, 1805, p.134.

47 John Bryers to Sir John Delaval, April 18th 1780. NCRO/2DE/4/19.

48 Ibid., Dec. 7th 1782. NCRO/2DE/4/20/28.

coast considerably increased the value of farms.⁴⁹ Sea shells were also occasionally used on all but sandy soils, though the practice of first burning them had died out in the mid-18th century.⁵⁰ Marl was sometimes used in the very north of the County, the only part where it was found, but had generally given way before the more immediate effects of liming in the second half of the 18th century.⁵¹ Ashes from the Hartley Salt Pans and Glass Works were used as manure in the 1780s,⁵² coal ashes as a dressing for grassland in the south-east,⁵³ and soot was effectively employed on land in the environs of Berwick.⁵⁴ Various other odd manures were tried in the first half of the 19th century, including salt,⁵⁵ 'Owen's Animalized Carbon' shipped direct from Copenhagen to Alnmouth⁵⁶ and Peat Ashes from Rotterdam,⁵⁷ but derivatives from lint and rapeseed seem to have been reserved almost exclusively for feeding to cattle as oil cake rather than for direct use on the land as fertilizer.⁵⁸

Considerable use seems to have been made of the refuse of towns as manure. The street sweepings of Newcastle were let annually to contractors to retail to farmers,⁵⁹ sold directly to farmers⁶⁰ or simply given away.⁶¹ Cost of carriage was the difficulty. Even after the railway had substantially reduced transport costs, carriage of an unspecified manure from Newcastle to Haydon Bridge in 1852 still made the manure 50% dearer than when delivered at Stocksfield.⁶² Attempts to reduce the weight and bulk of urban manure resulted in such products as 'Clark's Dessicated

49 Ibid., March 10th 1786, NCRO/2DE/4/21/31; N.C., July 10th 1779.

50 John Wallis, op.cit., p.31.

51 Bailey and Culley, 1805, p.134.

52 John Bryers to Sir John Delaval, Feb.14th, May 27th 1783. NCRO/2DE/4/20/35, 48.

53 Bailey and Culley, 1805, p.135.

54 John Fuller, History of Berwick, 1799, p.458.

55 N.C., Oct. 2nd 1819, April 9th 1825.

56 N.C., March 31st 1837.

57 N.C., June 13th 1845.

58 One exception was an advertisement for rape dust for use as manure. N.C., May 27th 1842.

59 e.g. N.C., Dec.20th 1794.

60 e.g. N.C., Oct.31st 1789, Jan 9th, Nov.27th 1790.

61 N.C., Sept.23rd 1809.

62 NCRO/NRO/309.

Compost and Compressed Night Soil', advertised in 1815 for use with any crop at the rate of 18 bushels per acre.⁶³ The same problem was solved in a different way by using town manure as ballast to fill the coal boats returning to the south-east Northumberland coast from London.⁶⁴ As early as 1769 Wallis claimed that "About Newcastle, a cold and hungry clay prevails, yet every field appears by culture like a garden, plentifully manured with dungs, some native, and vast quantities extraneous, brought at an easy price from London, by way of ballast in the coal ships".⁶⁵ As late as 1840, manure was still coming to Earsdon Parish from London as ballast in coal ships.⁶⁶ In 1864, Newcastle rubbish was being sent to Morpeth by rail where it was sold at 2/8 per ton for use as farm manure.⁶⁷ The facility of obtaining town and other sorts of manure from Newcastle had even brought about a change in normal leasing conditions on farms in the south-east whereby hay and straw were allowed to be sold in town as long as sufficient manure was brought in on the carts' return journeys to compensate for the loss.⁶⁸

Another method of manuring land to be attempted in Northumberland was irrigation, the system of watering meadows. There can be little doubt that Culley personally brought the innovation to the County. He had probably seen it in operation at Dishley when he visited Robert Bakewell in the 1760s and his brother Matthew had been impressed by examples he saw in Forfar in 1770.⁶⁹ Although the Culleys may have experimented in

63 N.C., Sept.9th 1815.

64 John Hodgson, op.cit., p.28; Edward Grace to Sir John Delaval, Aug.23rd 1803, NCRO/2DE/4/25/17.

65 John Wallis, op.cit., p.36.

66 Tithe File for Seaton Delaval and Hartley, March 6th 1840. PRO(A)/IR/18/7211.

67 John Wilson, op.cit., p.4. NCRO/ZSW/Add. & Misc.

68 e.g. Tithe Files for Ponteland Township, March 31st 1841. PRO(A)/IR/18/7180; Prestwick Township, April 1st 1841 (7186); Coldcoats, May 20th 1840 (6905); Kenton, Gosforth, Dec.7th 1839 (7081).

69 Matthew Culley's Journal, 1770. NCRO/ZCU/1.

Northumberland as early as 1779,⁷⁰ George certainly received advice from Bakewell in 1787 to procure a waterman from Charles Boswell in Piddletown, Dorset.⁷¹ The end result was that Culley took Boswell's advice,⁷² trained one of his own labourers in carpentry and sent him to Dorset to learn from Boswell's labourers.⁷³ The labourer returned and the first water meadows in the County were constructed at Wark and later at Halton Castle and Aydon Castle.⁷⁴ By 1811 they had been established at Ray in Kirkwhelpington⁷⁵ and Kirkharle,⁷⁶ but even by the mid-19th century there were only a handful of water meadows in Northumberland and in Glendale, the seat of their introduction, the only examples were those at Wark, Turvelaws, Yeavering and Coupland.⁷⁷

The idea of the water meadow was to flood pasture temporarily by means of channels and locks so that the grass was not only well watered but also manured by the depositing of silt carried in the water. The result was a very early growth of grass in the Spring, most useful if large numbers of stock had to be wintered. Yet despite the obvious advantages for Northumberland, the availability of experts from the South to execute the work,⁷⁸ and the enthusiasm shown by Culley for the system,⁷⁹ the innovation did not catch on in Northumberland. Across the Border in Roxburgh, where water meadows had been in use as early as 1770,⁸⁰ the forty or so financed by the Duke of Buccleugh had mostly been ploughed up by 1815.⁸¹ Where winter feed could be provided by growing turnips,

70 Bailey and Culley, 1805, p.136.

71 Robert Bakewell to George Culley, Feb.18th 1787. NUL/Basement Store/Misc.Mss./7.

72 George Boswell to George Culley, March 25th 1787. NCRO/ZCU/12.

73 George Boswell, Treatise on the Watering of Meadows, 1792, p.115.

74 Thomas Bell, History of Improved Short-Horn Cattle, 1871, p.240.

75 N.C., Aug.3rd 1811.

76 Bailey and Culley, 1805, p.137.

77 Mr. Henderson to Wooler Farmers' Club, J.N.A.S., 1848, p.5.

78 William Mure to George Culley, May 23rd 1793. NCRO/ZCU/18.

79 George Culley to John Welch, Sept.17th 1799. NCRO/ZCU/6; George Culley, Observations on Livestock, 1801, p.201.

80 R.A.Dodgshon, Agricultural Change in Roxburghshire and Berwickshire 1700-1820, Ph.D. Thesis, Liverpool University, p.308.

81 F.M., 16, 1815, pp.42-8.

there was little need to go to the trouble and expense necessitated by water meadows. Donaldson estimated in 1796 that proprietors in the South of Scotland were spending between £10 and £20 per acre installing a system virtually guaranteed to induce sheep rot.⁸² Despite the initial enthusiasm of the innovator and the imitation of a few leading farmers, it would seem that there was no general interest in a system of manuring that had serious disadvantages and few advantages not attainable by the cultivation of turnips.

Sodium Nitrate seems to have reached Northumberland from Peru in the 1830s and was used with some success on grassland.⁸³ It was frequently advertised by importers in Newcastle in the early 1840s,⁸⁴ but by 1847 its popularity had virtually disappeared.⁸⁵ It had been superceded by a revolutionary new manure - guano. Guano was the droppings of sea birds which, accumulated and preserved in various arid parts of the world, contained soda, ammonia and phosphates. It was particularly useful as a manure for the turnip crop,⁸⁶ but as with other 19th century manures, was intended for use along with normal farm-yard dung; to supplement it, not replace it.⁸⁷ This new manure appears to have reached Northumberland from Peru in 1839,⁸⁸ though was not well known in south Northumberland in 1841.⁸⁹ At first it was very expensive, between £20 and £25 a ton,⁹⁰ but this was rapidly reduced to £17 in May 1842,⁹¹ £15 in September 1842.⁹² £13 then £12 in March 1843,⁹³ £7 in May 1844⁹⁴ and £5.8.0 per ton in

82 James Donaldson, *Modern Agriculture*, 1796, 3, p.422.

83 C.A. Monck to Tyneside Agricultural Society, N.C., Sept.3rd 1841.

84 e.g. N.C., April 17th 1840, Feb.11th, March 11th 1842.

85 Thomas Colbeck to Newcastle Farmers' Club, Sept.24th 1847. L. & P. Bolbec N630.6/1.

86 For an account of its beneficial effect on a Northumberland oat crop in 1846 see J.C.Jobling, *J.N.A.S.*, 1847, p.69.

87 G.H.Ramsay to Newcastle Farmers' Club, March 6th 1847. L.& P. Bolbec N630.6/1.

88 Professor Johnston to Newcastle Farmers' Club, July 1851. L. & P. Bolbec N630.6/2.

89 John Grey to Tyneside Agricultural Society, N.C., Sept.3rd 1841.

90 Ibid.

91 N.C., May 6th 1842.

92 N.C. Sept. 30th 1842

93 N.C., March 24th, 31st 1843.

94 N.C., May 17th 1844.

April 1849.⁹⁵ As price dropped, so too did quality. Peruvian stocks were rapidly exhausted and lower grade guano was brought from Saldanha Bay and Elizabeth Island in Africa after 1845.⁹⁶ The cheapest guano of all came from the Orkneys and was marketed by the British Agricultural Company.⁹⁷ It is also likely that price reduction was assisted by the practice of adulteration. Genuine guano was too powerful for undiluted application,⁹⁸ but the unsolicited addition of vast quantities of materials with no fertilizing properties⁹⁹ can have done little to encourage the rapid adoption of the new manure and probably restricted its initial use to more adventurous farmers. Guano heralded a more scientific use of manure than had previously been known, but which had hardly been achieved by the mid-19th century when one leading Northumberland farmer could say, "I look forward to an entire change in our system of manuring. Not, as at present, to lay on so many hundredweight of bones or guano and so much [farm-yard] manure to one fallow, leaving our four following crops to their chance, and our manure to be washed away through the drains. No; we must now add to each crop what that crop alone requires".¹⁰⁰

95 N.C., April 27th 1849.

96 e.g. N.C., Aug. 22nd 1845, May 29th 1846.

97 N.C., April 27th 1849.

98 John Grey to Tyneside Agricultural Society, N.C., Sept. 3rd 1841.

99 G.E. Fussell, 'Market Talk in 1862', Country Gentlemen's Estate Magazine, 63 (1), 1963, p.10.

100 Thomas Colbeck to Newcastle Farmers' Club, Sept. 24th 1847. L. & P. Bolbec N630.6/1.

XVIII

AGRICULTURAL IMPLEMENTS

The extremely rapid diffusion of the threshing machine in Northumberland towards the end of the 18th century contrasts sharply with the rate of adoption of other farming tools available shortly afterwards. Northumberland farmers seem to have been hesitant to commit themselves to the use of new forms of agricultural machinery and the threshing machine and drill were the only new implements of any real significance in the improvement of the County's farming before 1850 (see pp. 410-468).

This is strange in an area where farms were large and their farmers generally willing and able to try new ways, where wages were high and workers often scarce and where the threshing machine had long demonstrated the possibilities of mechanisation.

All evidence of the late 18th century, but especially the farm stock advertisements of the period, suggests that standard farm equipment consisted of carts, ploughs, harrows, rollers, winnowing machines and little else, apart from hand tools. In 1808 it was stated that no department of British agriculture had advanced more in the previous 30 or 40 years than the construction of implements, resulting in the improvement of old machines and the invention of new.¹ Yet they had not been adopted at a rate comparable with that of other improvements, a situation attributed to the reluctance of farm workers to learn new skills, of farmers being unaware or unconvinced of improvements and to the great expense of new machines, particularly those bought from a distance. Where new implements are known to have been in use in Northumberland in the 18th century, it was frequently the incentive of landlords that had

1 Andrew Grey, *The Plow-Wright's Assistant*, 1808, pp.vi-xi.

2 Ibid.

introduced them, as Sir John Delaval had done with new ploughs and winnowing machines sent from Carlisle and London to try on his Northumberland estates in the 1780s. (see pp. 92-4).

There is no evidence of this activity having been general even among landlords and it was certainly not so among tenants. Farmers either made implements themselves³ or contracted the local smith to make them, or specialist plough wrights such as the one mentioned in 1782, too unskilled to be a carpenter and therefore in "the plough and Harrow business in his own Itinerant way from Farm house to Farm house - his Ploughs will nether keep rectilinear nor go without unnatural rising and depressing and few can make them go at all".⁴ There is no doubt that single examples of new improved implements were available locally from an early date, but diffusion was often hampered by the inability of local craftsmen to imitate proficiently. In 1803, George Culley wrote to John Welch, "We have got a new fashioned Corn rake f^m Leicestershire this year. If it answers we must get you one made & sent by & bye! But I dont know whether our Smiths can make the teeth right or not? For the excellence seems to consist entirely in the teeth which are long & tapered & anchored, & steeled I believe".⁵ Even in the mid-19th century, most farm implements were still made by local artisans, but even when these were competent craftsmen it was claimed that "from their position they do not get far from home, and they have little opportunity of improving; consequently they go on with the same kind of implements and the same patterns as used by their forefathers".⁶ When farmers wanted any implement that was out of the ordinary made locally, they had to go to some lengths to get it done. Culley had to leave two plough mouldboards at a foundry in

3 George Gladstone to Sir John Delaval, March 17th 1794. NCRO/2DE/4/49/1.

4 Joseph Oxley to Sir John Delaval, Jan 10th 1782. NCRO/2DE/4/14/1.

5 George Culley to John Welch, Sept. 10th 1803. NCRO/ZCU/6.

6 Joseph Laycock to Newcastle Farmers' Club, Oct. 8th 1847. L. & P. Bolbec, N630.6/1.

Tweedmouth from which copies for his future orders could be cast.⁷

Strangely enough, mid-19th century Newcastle possessed no implement depot where farmers could inspect a range of ready-made machines. Consequently, farmers anxious to try new implements had to resort to an inspired local black-smith or buy either direct or through middlemen from distant manufacturers.⁸ Either way, there was no guarantee of satisfaction, even presuming the individual farmer had been sufficiently convinced of the utility of the new implement to attempt to get one. It was a matter of great regret for at least one eminent implement maker that even the County Agricultural Reports had made no real effort to make known the success of an implement in one county to the farmers of another.⁹ It may have been that the majority of Northumberland farmers was either ignorant of improved implements or not sufficiently convinced of their advantage to risk spending money on them. Elsewhere it was remarked that new agricultural machines had been valued for the abridgement of labour they afforded¹⁰ or for their capacity to reduce agricultural costs in general,¹¹ but in Northumberland, this was not the case. Hasbach was puzzled by Culley's claim that the value of agricultural implements in Northumberland was not in their reduction of costs. Indeed, they had apparently not had that consequence at all, but had rather enabled the farmer "to do many things which he would have left undone if he had only manual labour to depend upon".¹² In other words, agricultural mechanisation in Northumberland was associated with expansion in agricultural production, with increased productivity rather than a reduction in existing production costs. Herein may lie the reason for the tardy

7 George Culley to Robinson & Co., Dec.20th 1810. NCRO/ZCU/31.

8 Joseph Laycock, 'On Agricultural Implements', J.N.A.S., 1848, p.48.

9 William Amos to George Culley, Sept.21st 1794. NCRO/ZCU/18.

10 William Lester, A History of British Implements and Machinery Applicable to Agriculture, 1811, p.208.

11 F.M., 21, 1820, pp.486-7.

12 Quoted in W. Hasbach, A History of the English Agricultural Labourer, 1908, p.256.

adoption of improved agricultural machinery in the County. While wartime profits from agriculture were generally quite satisfactory without resorting to mechanisation, the post-War period was probably not conducive to wholesale agricultural expansion. It seems likely that there was a significant increase in arable acreage between 1803 and c.1850 (see pp. 208-233) and that this largely took place in the second quarter of the century, at a time when Northumberland farmers began to show their first real interest in mechanisation since the introduction of the threshing machine. Yet even by mid-century, Northumberland agriculture was far from mechanised. Colbeck remarked that many Northumberland farmers thought the new machines too expensive and complicated¹³ and Wilson that any comparable southern or midland farm would outclass the Northumberland in quantity and quality of implements.¹⁴ Of the 800 or so implements exhibited at the Royal Agricultural Show held in Newcastle in 1846, only 12 came from either Durham or Northumberland and none of these won any prize.¹⁵

Local newspaper advertisements make it clear that improved implements were available in Northumberland, but at the earliest period, only from a distance and at a price. The first advertisement of this sort appeared in 1783 and promoted the ploughs, rollers, water-pumps, drills, horse hoes and rakes, straw and turnip cutters, weighing machines and mills of William Winlaw, Engine-Maker of Cavendish Square, London.¹⁶ It would seem that the advertisement was directed primarily at merchants, but it attracted at least one order from a Northumberland estate.¹⁷ A specialist drill-maker from Bedale in Yorkshire appealed to ordinary farmers in 1788¹⁸

13 Thomas Colbeck, p.424.

14 John Wilson, Notes on Northern Farms and Farming, 1864, p.20.
NCRO/ZSW/Add. & Misc.

15 N.C., Jan.14th 1848.

16 N.C., Aug.30th 1783.

17 Joseph Oxley to William Winlaw, Sept. 9th 1783. NCRO/2DE/4/15/48.

18 N.C., Feb.23rd 1788.

and James Small himself offered his ploughs from Midlothian in 1790.¹⁹ Thomas Proud of Darlington was the first manufacturer to give any sort of price list, but this was for delivery at Darlington; carriage to Northumberland would have been extra.²⁰ In none of these cases would it have been possible for farmers to have seen what they were buying before commitment. Not until 1814 did any implement maker advertise that he was to show his goods at local markets,²¹ and not until 1813 did a local manufacturer, one Richard Sharper, newly arrived from London and bringing with him the first known use of the term 'scarifier', advertise his wares.²²

Many of the early implement makers seem to have been very narrow specialists. Anthony Collier of Richmond was a winnowing machine maker²³ as was Jonathon Simpson of Horsley Tyne Side;²⁴ R. Scurr of Thirsk made turnip drills²⁵ and Henry Smith of Bedlington only harrows.²⁶ Orders for implements could be placed and received either at the factories or at various public houses and shops in the County. The only sizeable manufacturers in the County offering a variety of agricultural implements seem to have been Richard Sharper at Manor Chare, Newcastle between 1813 and 1834,²⁷ succeeded by his nephews, Messrs Hutchinson and Swales, between 1835 and 1838²⁸ and then by John Stephenson after 1841;²⁹ and James Crozer and Partners operating in both Alnwick and Newcastle from 1818 to some time after 1832.³⁰ There can be no doubt that these men offered locally a wide range of agricultural implements of which they were either

19 N.C., May 22nd 1790.

20 N.C., March 28th 1801 and May 24th 1806.

21 Robert Bains of Pelton, N.C., April 30th 1814.

22 N.C., July 24th 1813.

23 N.C., June 20th 1807.

24 N.C., May 21st 1814. See also N.C., May 25th 1822.

25 N.C., June 11th 1814.

26 N.C., March 29th 1817.

27 N.C., July 24th 1813 - Feb. 22nd 1834.

28 N.C., Feb. 21st 1835 - April 13th 1838.

29 N.C., May 14th 1841.

30 N.C., May 30th 1818 - June 30th 1832.

the manufacturers or the agents of more distant manufacturers, but even Richard Sharper was at least partly dependent on the manufacture of non-agricultural implements³¹ and James Crozer was primarily a seed merchant, bankrupt by 1825.³² These were no more than small businesses either handed down in the family, as was Sharper's concern, or carried on by trusted foremen.³³ It seems significant that agricultural implement makers of the 1840s no longer chose to emphasise implements of their own manufacture, but rather their role as agents for implements already tried and tested elsewhere. Wilkin and Dickman of Alnwick, for example, were primarily the agents for the sale of the Ducie Drag,³⁴ Mr. Burnett of Black Hedley was selling the patent seed and manure drill of Mr. Brown from Cheshire,³⁵ and Matthew Gibson of Newcastle had, by 1850, established a depot for the sale of implements from other factories as well as of his own clod crusher.³⁶ This reversion to the earlier specialisation and the failure of any large scale agricultural engineering concern to establish itself, despite the industrial initiative evident on Tyneside, suggests that there was something seriously lacking in the demand for agricultural implements from Northumberland farmers during the first half of the 19th century. Ransomes of Ipswich were offering free illustrated implement catalogues by post by 1844,³⁷ Crosskills of Beverley by 1846,³⁸ and it may well have been that Northumberland demand for the latest improved implements was so small that it was largely satisfied by mail order.

Although agricultural societies came to recognise the showing of the latest and best agricultural implements to be an important part of their function, this was by no means the case in the early days of these

31 N.C., May 28th 1814.

32 N.C., June 18th 1825.

33 e.g. John French's business, N.C., Dec.1st 1837.

34 N.C., Nov.8th 1844.

35 N.C., Sept.18th 1846.

36 N.C., Oct.11th 1850.

37 N.C., Aug.30th 1844.

38 N.C., April 3rd 1846.

societies. Table 18:1 reveals the somewhat delayed interest in agricultural implements shown by the Royal Agricultural Society and this was also the situation in Northumberland. Newspaper reports of the Northumberland Agricultural Society were depressingly similar. "The show of Agricultural Implements was exceedingly small; and there was not much deserving of particular attention."³⁹ "The agricultural implements were very few in number; and it is really a pity that a little more attention is not paid to this branch of our means of industry by the society."⁴⁰ "It is to be regretted that so little competition has taken place in former years for implements."⁴¹ "Turning to the corner devoted to implements, it became apparent that that most important department needs stimulating in one way or another."⁴² The report of the Berwick meeting of the Highland and Agricultural Society was much the same,⁴³ as were those of many meetings of the Tyneside Agricultural Society.⁴⁴

Table 18:1

A Comparison of Entries of Stock and Implements
at R.A.S.E. Shows

	<u>Stock</u>	<u>Implements</u>
1839 at Oxford	249	23
1840 at Cambridge	352	36
1841 at Liverpool	319	312
1842 at Bristol	510	455
1843 at Derby	730	508
1844 at Southampton	575	948
1845 at Shrewsbury	437	942

Source: Cuthbert Johnson, Modern Agricultural Improvements,
1847, p.5.

39 N.C., Oct.12th 1838.

40 N.C., Oct.11th 1839.

41 N.C., Aug.27th 1841.

42 N.C., Aug.20th 1847.

43 N.C., Oct. 1st 1841.

44 N.C., Sept.3rd 1841; Sept 23rd 1842; Oct.4th 1844; Aug.22nd 1845;
Oct. 8th 1847.

Only occasionally was there a reasonable selection of implements at agricultural shows in Northumberland before 1850 and even then it must be doubted whether such shows would have been powerful forces in persuading farmers of the utility of the new implements. It was said that the claims made for some implements were by no means borne out when the instruments were tried in practice,⁴⁵ and a 'North of England Repository for Agricultural Implements' was planned for Tudhoe, County Durham, sometime after 1843 specifically to overcome this disadvantage and to allow farmers to try implements at the time of year for which they were intended.⁴⁶ Nothing is known to have come of this plan.

It is illustrative of the prevailing situation in Northumberland that neither the reaping hook nor the scythe replaced the sickle as a reaping instrument in the first half of the 19th century. The smooth reaping or sharpening hook cut corn faster than the normal toothed sickle and the much larger scythe could be used to harvest at an even greater rate. Scythes were certainly readily available in the area from at least the 1750s and were made and sold by the sword-makers of Shotley Bridge,⁴⁷ yet John Jackson of Kendal was still able to make and sell over 6,000 sickles in 1790 alone.⁴⁸ Some reaping tools were certainly manufactured in Sheffield⁴⁹ and sold in Northumberland by general merchants and travellers rather than by specialists in agricultural implements.⁵⁰ This and the general absence of reaping tools from farm inventories seems to suggest that such implements were frequently the property of harvest labourers rather than of farmers. No amount of pressure from Berwickshire farmers could persuade their labourers to

45 Sir M.W. Ridley to Newcastle Farmers' Club, N.C., Jan. 14th 1848.

46 D/Sa/10/35

47 N.C., May 10th 1755; March 27th 1756.

48 N.C., July 2nd 1791.

49 N.C., March 26th 1803.

50 When Robert Smith, a Felton merchant, died, his stock to be auctioned consisted of "a good Assortment of Hats, Brushes, Scythes, Shearers' Hooks and Sickles". N.C., Aug. 20th 1796.

exchange their sickles for sharpening hooks in the 1790s, until itinerant shearers using such hooks effected the change by example.⁵¹ It is more realistic to visualise a situation in which high daily harvest wages were accustomed perks for the farm labourer's whole family. If Irish or Scotch reapers were alone in offering faster reaping, then local workers were in danger of suffering a reduction in their harvest income unless they too offered to use the faster tool. Itinerant harvesters were certainly at work in Northumberland and it may be that local labour would have been forced to overcome its natural prejudice towards a new implement had the farmer not had two sound objections to the change. The first of these was that no implement cut so low and therefore won as much straw for stock as the sickle. The second, and much more important in Northumberland by the early 19th century, was that only the sickle cut the corn neatly enough for presentation to the threshing machine.⁵² Though logic seemed to demand that the farmer changed to an implement which would have reduced labour costs⁵³ and though the decision was primarily that of the labourer whose incentive to change could only have been competition at harvest time, it may be that farmers actively encouraged the retention of the old-fashioned sickle for reasons totally unconnected with harvest labour costs.

The market for scythes in the County was small until the 1840s, but in 1845, John Stephenson, the implement maker of Newcastle, felt enough demand for the Aberdeen Corn Scythe to advertise for a man competent in its use, presumably to demonstrate it to customers.⁵⁴ By 1847, Drummond's Reaping Scythe with its attached corn cradle was available from Stirling at list price in Newcastle.⁵⁵ Where scythes were used in

51 F.M., 23, 1822, pp.235-6.

52 N.C., Aug.10th 1833.

53 F.M., 23, 1822, p.56.

54 N.C., Sept.5th 1845.

55 N.C., July 23rd 1847.

the County, they were straight-handled implements, capable of cutting a much larger swathe through the crop than the curved-handled scythes of the South.⁵⁶ While Southern labourers were always particular in choosing and fitting a scythe handle to exactly meet their individual requirements, this could not have been the case with the straight handles of the North and it seems likely that Northern scythes were the property of farmers rather than reapers. But in the mid-19th century, the general mode of reaping in Northumberland was still by sickle and what change there had been to scythes was attributed to a scarcity of foreign reapers in the 1850s.⁵⁷ Only then does it seem that the labour-saving advantages of the scythe super^seded the demands of stock and threshing machine. Only one scythe was mentioned in farm stock advertisements before 1847, in 1822. Between 1847 and 1850, no fewer than 14 farms offered scythes as part of their stock. Map 18:1 shows the distribution of these stock sales in the County and suggest only a very scattered use of the implement.

Another basic agricultural implement of which it is possible to trace some development is the farm cart. Agricultural waggons had apparently never been known on Scottish farms,⁵⁸ but had been used in Northumberland. Attempts were being made to improve agricultural waggons on the Swinburne Estate in Northumberland in 1762.⁵⁹ Though stock advertisements suggest they were to be encountered on many Northumberland farms in the 18th century, only 3 farms offered them for sale between 1800 and 1818. Nearly all agricultural opinion represented the cart as a more economic implement than the waggon.⁶⁰ When Colonel St. Paul was scouring the County in 1805 looking for waggons to move his troops

56 William Glover to Newcastle Farmers' Club, June 2nd 1849; L. & P. Bolbec, N630.6/2. J.C. Morton, *Cyclopedia of Agriculture*, 1855, 2, p.10.

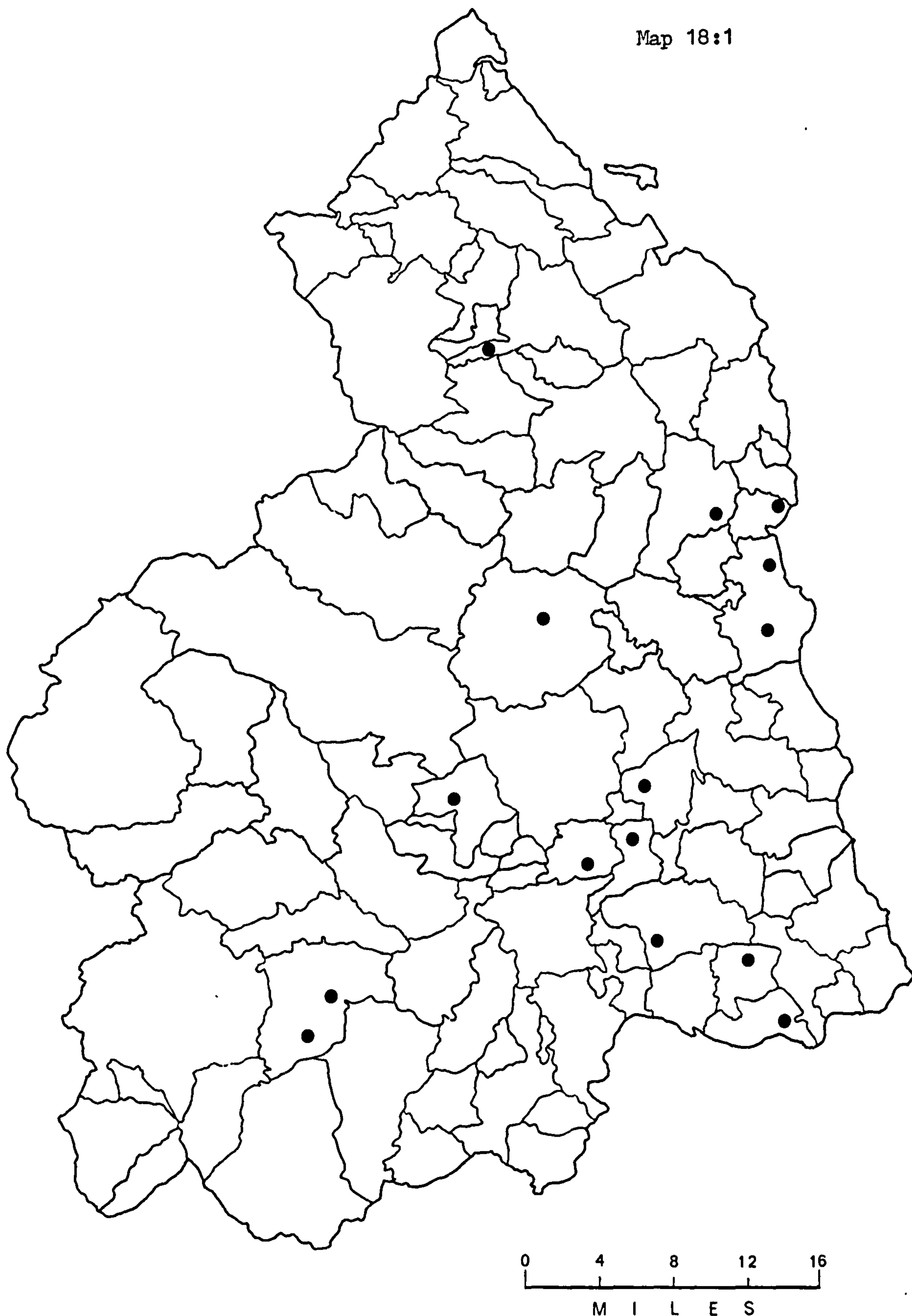
57 Seymour Bell, *Collections Relating to Agriculture*, c.1858; NCL/L630.

58 James Slight and Robert Burn, *Book of Farm Implements*, 1858, p.425.

59 William Kirsopp to Sir John Swinburne, Sept.24th 1762.NCRO/ZSW/213/3.

60 James Slight and Robert Burn, *op.cit.*, p.425; William Marshall, *Review and Abstract of the County Reports to the Board of Agriculture*, 1808-18, 1, pp.185-90; Cuthbert Johnson, *Modern Agricultural Improvements*, 1847, pp.57-8.

Map 18:1



Distribution of Scythes up to 1850.

Source: Newcastle Courant Farm Stock Sales
Advertisements to 1850.

in case of French invasion, he remarked that he thought that he would find none in Glendale Ward and would have to resort to two-horse carts.⁶¹ Table 18:2 is compiled from the County Returns of 1798 and 1803, gathered in case enemy invasion made it necessary to evacuate the entire coastal population, and suggests that waggons were very rare indeed in these parts of the County and that the motive power available was at least two horses per cart.

Table 18:2

Vehicle and Cart-Horse Returns, February 1798

	<u>Waggons</u>	<u>Carts</u>	<u>Cart-Horses</u>
Castle Ward East Division	2	747	1558
Castle Ward West Division	3	323	679
Morpeth Ward East Division	0	427	971
Morpeth Ward West Division	11	312	779
Coquetdale Ward East Division	2	388	881
Coquetdale Ward North Division (part)	8	207	497
Bamburgh Ward South Division	1	252	551
Bamburgh Ward North Division	0	257	564
Glendale Ward East Division	4	333	717
Glendale Ward West Division (part)	2	110	229

Source: NCRO/QSB/90.

Vehicle and Horse Returns, July 1803

	<u>Waggons</u>	<u>Carts</u>	<u>Horses</u>
Castle Ward East and West	21	1589	3223
Morpeth Ward East and West	2	794	1798
Coquetdale Ward East, West & North	18	1097	2487
Bamburgh Ward North and South	1	588	1315
Glendale Ward	-	502	1091
Tindale Ward North East	-	193	358

Northumberland Total	4-horse waggons.....	84
	3-horse carts.....	575
	2-horse carts.....	6256
	1-horse carts.....	2297

Source: AC/Y/4/2/b/5

⁶¹ Horace St.Paul to George Culley, Aug.15th 1805. NCRO/M/17/18.

Waggon were more common in the south of the County later in the 19th century, but the change to carts had taken place in the north long before.⁶²

Bailey and Culley wrote that waggon were of little utility to farmers and supported the introduction of one-horse rather than two-horse carts, a change that had already occurred in the Hexham area.⁶³ Hexham farmers had apparently followed the example of Cumberland farmers, among whom the one-horse cart was universal as a result of the average Cumberland farm being so small that it needed only one horse.⁶⁴ The advantage of the one-horse cart over the two-horse was that, though it carried less, more speedy and efficient use could be made of individual horse power and women or children, controlling strings of single carts, could replace the men who were normally needed to work the larger vehicles.⁶⁵

Though Culley used one-horse carts himself, his neighbours do not seem to have been keen to follow his example. In 1801 he wrote, "I have certainly long been convinced of the propriety & advantage of using Single horse Carts, but never c^d get it br^t about here yet altho many other people have adopted them in this County now, & they will one day become general in the Island".⁶⁶ It would certainly seem that by 1823 the single-horse cart had become general in north Northumberland for in that year farmers from the area petitioned Parliament to protest against the new Turnpike Act which would exact heavy tolls on narrow-wheeled vehicles. "Light Single Horse Carts" were said to be in "general Use in this Part of the Kingdom" and it was feared that the Act would force north Northumberland farmers to "relinquish one of the most beneficial Improvements in rural Economy, by laying aside the light Carts of the present Day, and resorting again to the cumbrous Carriages of a former Generation".⁶⁷ Despite the

62 J.C.M^cCulloch, Statistical Account of the British Empire, 1837, p.466.

63 Bailey and Culley, 1805, p.38.

64 Bailey and Culley, Agriculture of Cumberland, 1805, p.212.

65 John Allen to Newcastle Farmers' Club, May 5th 1848. L. & P., Bolbec N630.6/2.

66 George Culley to John Welch, Nov.7th 1801. NCRO/ZCU/6.

67 N.C., Jan.18th 1823.

Act, the North kept its one-horse carts, though the south of the County does not seem to have appreciated the advantages to quite the same extent. A traveller passing south through Northumberland from Scotland in 1812 noticed the change from the Scotch type one-horse cart to two-horse carts about four miles south of Alnwick, but even these two-horse carts were said to have been light and a marked improvement on the waggons and carts drawn by up to six horses common in the South of England.⁶⁸

By mid-century, two-horse carts were said to be in common use in the south of the County and single-horse carts introduced to only a limited extent in the neighbourhood of Newcastle.⁶⁹ Colbeck talked of the replacement of old waggons and heavy carts by single-horse carts in 1847⁷⁰ and was presumably thinking of this region. But in Hexham, where Culley had said single-horse carts were first used in Northumberland, progress had not been maintained. A visitor to the market there in 1859 remarked that "The clumsy primitive-looking carts have not all disappeared".⁷¹ This confirms Marshall's suspicion that the Cumberland and Hexham carts of which Culley boasted were more the descendants of sledges than the precursors of improved carts.⁷² Despite Culley's evidence, it is more realistic to conclude that the single-horse cart in Northumberland was a product of Scotch influence and that its diffusion through the County was from the north rather than from the west.

Bailey and Culley reported the swing plough to have been in general use throughout the County by the turn of the century,⁷³ and to have entirely replaced the very heavy wooden ploughs hauled by teams of oxen in the mid-18th century (see p. 261). The County Report also described a single-horse plough which could be converted into a double mould-board

68 F.M., 13, 1812, p.197.

69 John Allen to Newcastle Farmers' Club, May 5th 1848. L.& P., Bolbec. N630.6/2.

70 Thomas Colbeck, p.424.

71 Walter White, Northumberland and the Border, 1859, p.62.

72 William Marshall, op.cit., p.186.

73 Bailey and Culley, 1805, pp.38-9.

plough by the addition of another mouldboard, but was categorical in condemning the use of wheeled ploughs.⁷⁴ Only one such plough, a Norfolk wheeled plough sold from Seaton Hall Farm, Seaton Delaval, in 1817,⁷⁵ is known to have been used in the County. When Joseph Oxley was at Swafham in Norfolk in 1781, selling bottles for the Seaton Sluice Works, he wrote home that "the farmers plough whith [sic] wheel Plough and Make their furrows Much Shallower than those made in Northumber [sic] an Admirable method for by that mens [sic] they Cultivate and Manure less soil than we do and this renders a little dressing of manure more likely to answer their Purbose [sic] for the Corn roots never go Deeper than ab 2 Inches and they plough about 4 Inches deep".⁷⁶ This was hardly good husbandry and the only advantage of these ploughs was that their wheels regulated furrow depth. Less skill, therefore, was needed from the ploughman. Patent ploughs from local and national manufacturers were available throughout the first half of the 19th century, Ransome's plough with self-sharpening sock first being advertised in 1810.⁷⁷ But long before this, plough wrights particularly proud of their own designs, had offered them to the community. John Pearson of Longhirst, near Morpeth, offered a new sort of plough in 1776 "which takes the least draught of any Plow that can be made, and preserves the plow irons a long time without the help of any Blacksmith".⁷⁸ Northumberland men in other parts took note of local plough types and sent back either word or specimen,⁷⁹ but no serious competitor to the light swing plough was ever found. Improvements were made in using more iron and less wood in the ploughs and in the shape of the mouldboard.⁸⁰ New designs were made,⁸¹ but all was based

74 Ibid.

75 N.C., Oct.18th 1817.

76 Joseph to Sir John Delaval, Jan.2nd 1781. NCRO/2DE/4/13/2.

77 N.C., Feb.24th 1810..

78 N.C., April 6th 1776.

79 e.g. John Bryers to Sir John Delaval, Feb.14th 1783, NCRO/2DE/4/20/35; Joseph Oxley to Sir John Delaval, Feb.22nd 1783, NCRO/2DE/4/15/13; William Mure to George Culley, March 31st 1793, NCRO/ZCU/18.

80 Joseph Laycock to Newcastle Farmers' Club, Oct.8th 1847. L. & P., Bolbec, N630.6/1.

81 John Bailey, Essay on the Construction of the Plough, 1795.

on the Scotch swing plough as modified by James Small, and both modifications and construction of ploughs were nearly always circumscribed by the skill and persuasion of the local blacksmith. Despite all the improvements and patent importations, the plough in universal use in Northumberland in the mid-19th century was still basically the Scotch swing plough, drawn by two horses and driven by a single ploughman.⁸² The first steam plough to be tried in the County was at Scremerston Farm in 1860, the second three years later, nearby at Berrington.⁸³

Newspaper stock advertisements were very rarely precise about the sort of ploughs advertised for sale. Some effort was made to emphasise that some ploughs were made of iron rather than wood, but this distinction was rarely made after about 1835 and it is presumed that an entirely or largely wooden plough would have been an oddity after this date. Increasing attention was also paid to specific plough functions and there were no longer simply ploughs or swing ploughs, but draining ploughs, paring ploughs, ribbing ploughs, double mouldboard ploughs and scuffling ploughs. It is this last group that may be worthy of further examination here as being representative of a situation in which implements were being improved and adapted to execute specific and limited tasks rather than a whole range of functions. The scuffling plough was used to clean the furrows between the drills of a green crop, to loosen the soil, and to pare away or bank up the sides of the drills. Such implements could range from double mouldboard ploughs with wide single share and mouldboards adjustable to furrow width, to a sort of grubber device, paring the ridges with two flattened curved tines.⁸⁴ Nevertheless, the scuffler was commonly described as a plough in Northumberland and Table 18:3 traces the growth of its popularity. It reveals a slow appreciation of the advantages of this particular specialised implement and presumably of others over the multi-purpose plough until the 1830s. By the late 1840s, it would appear that at least 20% of Northumberland farmers, and probably far more, thought such an implement necessary.

⁸² Thomas Colbeck, p.424. J.R.M^cCulloch, op.cit., 1, p.175.

⁸³ John Wilson, op.cit., p.11. ⁸⁴ James Slight & Robert Burn, op.cit., p.270.

Table 18:3Scuffling Ploughs

	<u>Scuffling Ploughs Mentioned</u>	<u>Total Stock Advertisements</u>	<u>% of Farms with Scuffling Ploughs for Sale</u>
1816	0		
1817	0		
1818	0	280	0%
1819	0		
1820	1		
1821	2		
1822	2		
1823	1	241	4%
1824	1		
1825	3		
1826	2		
1827	0		
1828	1	303	2%
1829	0		
1830	4		
1831	6		
1832	1		
1833	5	363	7%
1834	5		
1835	9		
1836	4		
1837	7		
1838	15	299	13%
1839	7		
1840	7		
1841	13		
1842	11		
1843	8	335	15%
1844	10		
1845	9		
1846	11		
1847	19		
1848	20	414	20%
1849	10		
1850	23		

Source: N.C., 1816-1850.

Map 18:2 shows the distribution of farms offering such scuffling ploughs for sale. Not surprisingly, the distribution was similar to that of turnip drills (see Maps 19:1 & 2) with a partial invasion of central and western Northumberland following the adoption of turnip husbandry in these regions. While the concentration of scuffling ploughs in the area between Alnwick and Bamburgh and along the Tyne Valley was predictable, it is odd that so many should have been reported at all three periods on the heavy soils of the south-east and so few on the turnip lands of the north. The assumption is that in areas where early and extensive turnip cultivation had long demanded scuffling treatment, the scuffling plough or its equivalent was too commonplace to provoke differentiation from other ploughs. Only in areas where there was a new demand for scuffling - as in the south-east - was there any point in stressing the separate existence of a scuffling plough.

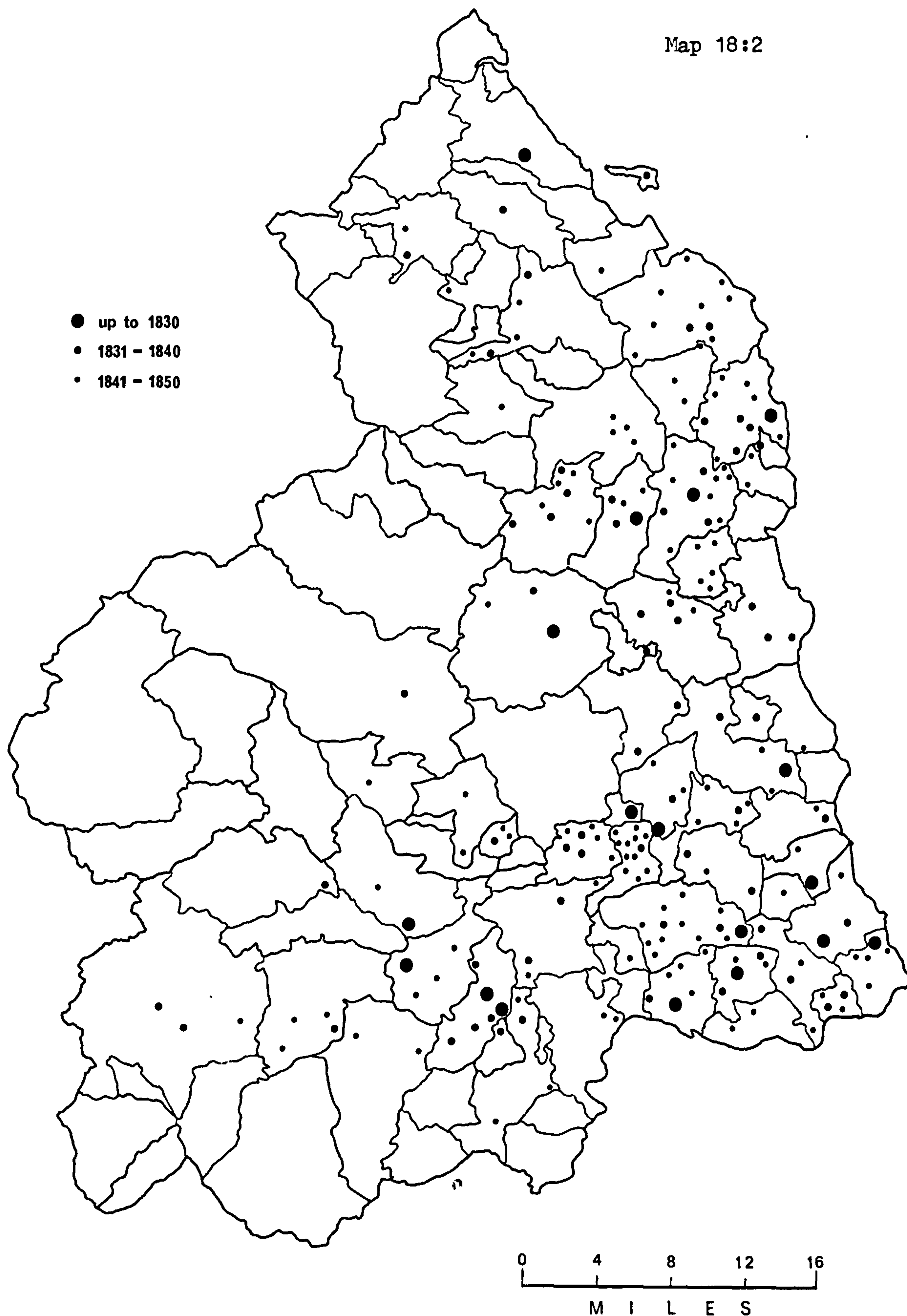
It is often difficult to disentangle the terminology 19th century farmers used to describe the implements they employed. A double plough, for example, may have been a plough with two shares or simply a double mouldboard plough; a ribbing plough anything from a swing plough to a multi-tined harrow. But one implement that does seem to have been of increasing importance was the grubber, also referred to as a scarifier or cultivator and probably sometimes, though unidentifiably, as a brake or harrow. The grubber did much work formerly and more slowly done by the plough. It was armed with five or seven tines mounted on wheels and was designed to pulverize the soil and bring the weeds to the surface. Those with adjustable or removable tines could also be used to rib, to scuffle between rows of green crops and, with steerage mechanism, even as a horse hoe for cleaning drilled corn.⁸⁵ Earlier versions had apparently met with some disfavour, being very heavy and punishingly hard work for even four horses.⁸⁶ The grubber was advertised by the implement makers from 1813⁸⁷ and was first reported in a Northumberland

⁸⁵ R.M. Weeks to Newcastle Farmers' Club, July 1st 1854. L. & P., Bolbec N630.6/3.

⁸⁶ Ibid.

⁸⁷ N.C., July 24th 1813.

Map 18:2



Distribution of Scufflers up to 1850.

Source: Newcastle Courant Farm Stock Sales
Advertisements to 1850.

farm sale in 1817.⁸⁸ Yet its adoption up to 1850 was slow. In 1847 it was remarked that the grubbers had done much to replace the old heavy brakes, but were still not common in Northumberland.⁸⁹ Table 18:4 shows the numbers of grubbers offered for sale in farm stock advertisements compared with the numbers of harrows heavy enough to be termed brakes and confirms both the slow adoption of the former and the fact that no decline took place in the popularity of the latter. Map 18:3 shows the distribution of those grubbers mentioned in Northumberland farm stock advertisements up to 1850. As the main advantage of the grubber was that it could pulverize, though not turn, soil more thoroughly and quickly than the plough, it was in greatest demand on land that would have required most frequent ploughing, especially heavy, rough or foul land.⁹⁰ Hence, at all periods up to 1850, the grubber was to be found concentrated in the south-east of the County. Only in the 1830s and 1840s was there northern interest in the grubber, and then it was largely restricted to the heavier lands on the coast.

Table 18:4

Grubbers and Brakes in Northumberland

	<u>Grubbers</u>	<u>Brakes</u>
1816-1820	1	0
1821-1825	9	5
1826-1830	6	9
1831-1835	6	11
1836-1840	9	15
1841-1845	8	13
1846-1850	11	22

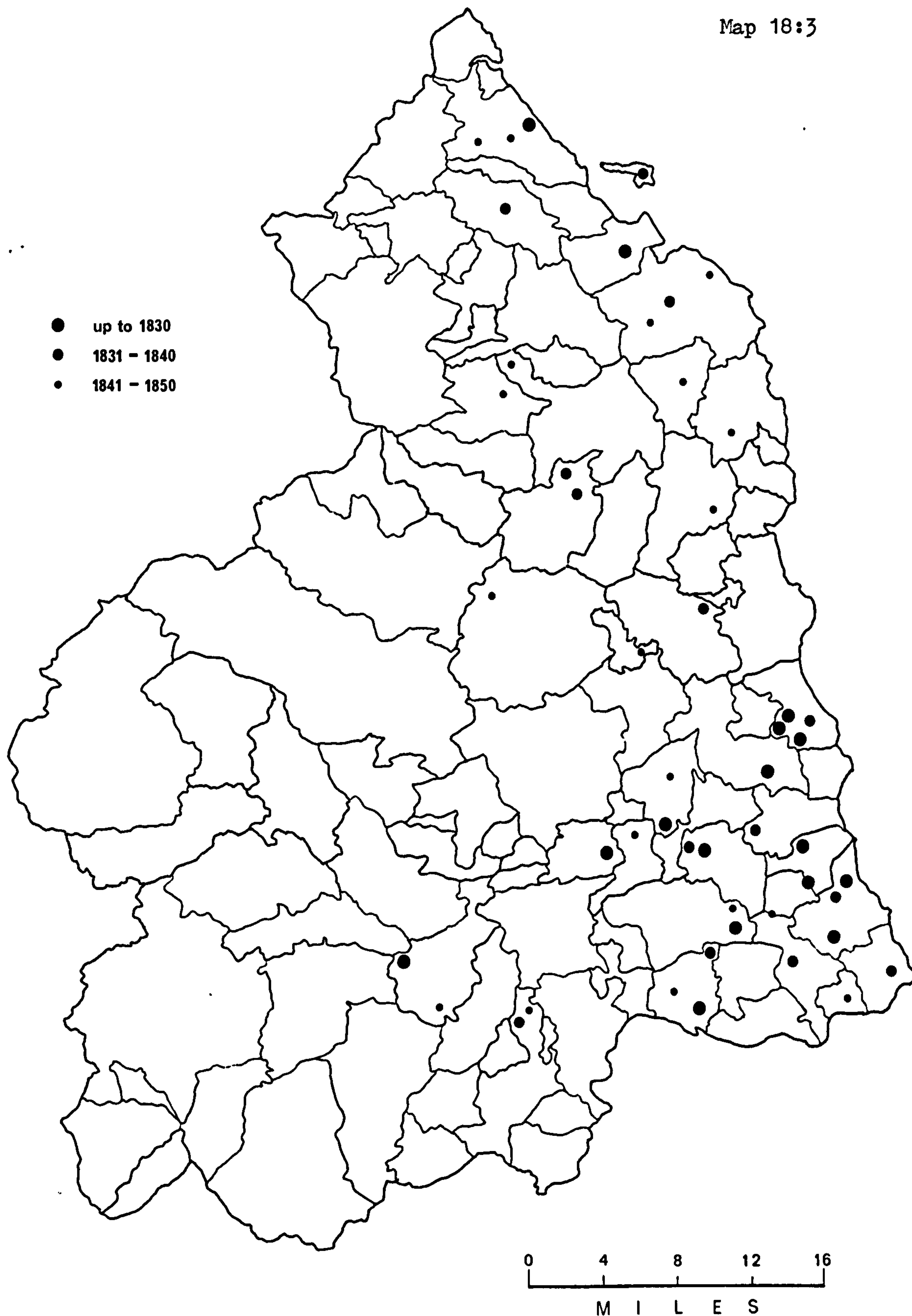
Source: Newcastle Courant Farm Stock Sales Advertisements, 1816-1850.

88 Seaton Hall Farm, N.C., Oct. 18th 1817.

89 Joseph Laycock to Newcastle Farmers' Club, Oct. 7th 1847. L. & P., Bolbec, N630.6/1.

90 James Slight and Robert Burn, op.cit., pp. 239-40.

Map 18:3



Distribution of Grubbers up to 1850.

Source: Newcastle Courant Farm Stock Sales
Advertisements to 1850.

Other improved farming implements were employed in Northumberland during the first half of the 19th century. Horse hoes, used to clean between rows of drilled corn, were described as new in the County in 1803,⁹¹ were first advertised by the implement makers in 1783⁹² and first known on a farm in 1820,⁹³ but the only other known use of one was on Greensfield Moor Farm, near Alnwick, in 1848.⁹⁴ In a County in which the drilling of corn was not popular, it was hardly to be expected that the horse hoe should be. Horse rakes, used to sweep corn, hay or sometimes weeds, were also offered to the public for the first time in 1783⁹⁵ and are first known to have been used on Middle Duddoes Farm, Stannington, in 1822,⁹⁶ but did not become at all popular until the late 1840s. Map 18:4 suggests a wide distribution of what horse rakes there were in the County by mid century. Hay tedders, to turn cut hay, were available from 1814⁹⁷ and are known to have been in use from 1821,⁹⁸ but only four were offered for sale from Northumberland farms before 1850. In 1849, such a machine working on Woòlsington Home Farm was noted as a valuable curiosity in the County and its use recommended to local farmers.⁹⁹ No reaping machine was ever offered for sale by newspaper advertisement, though early interest was shown in the principle¹⁰⁰ and less than successful experiments were conducted in Cumberland.¹⁰¹ Thomas Brown of Alnwick was reported to have made a reaper that worked in 1816,¹⁰² but nothing more was heard of his triumph.

Barn machines seem to have shared a similar adoption pattern to field implements. Mills to crush corn for animal consumption were in use in the County from the mid-18th century and were being manufactured in

91 F.M., 4, 1803, p.563.

92 N.C., Aug.30th 1783.

93 Prior Thorns Farm, near Corbridge, N.C., April 29th 1820.

94 N.C., March 10th 1848.

95 N.C., Aug.30th 1783.

96 N.C., May 11th 1822.

97 N.C., Dec.3rd 1814.

98 Cheswick East Houses, Ancroft, N.C., April 14th 1821.

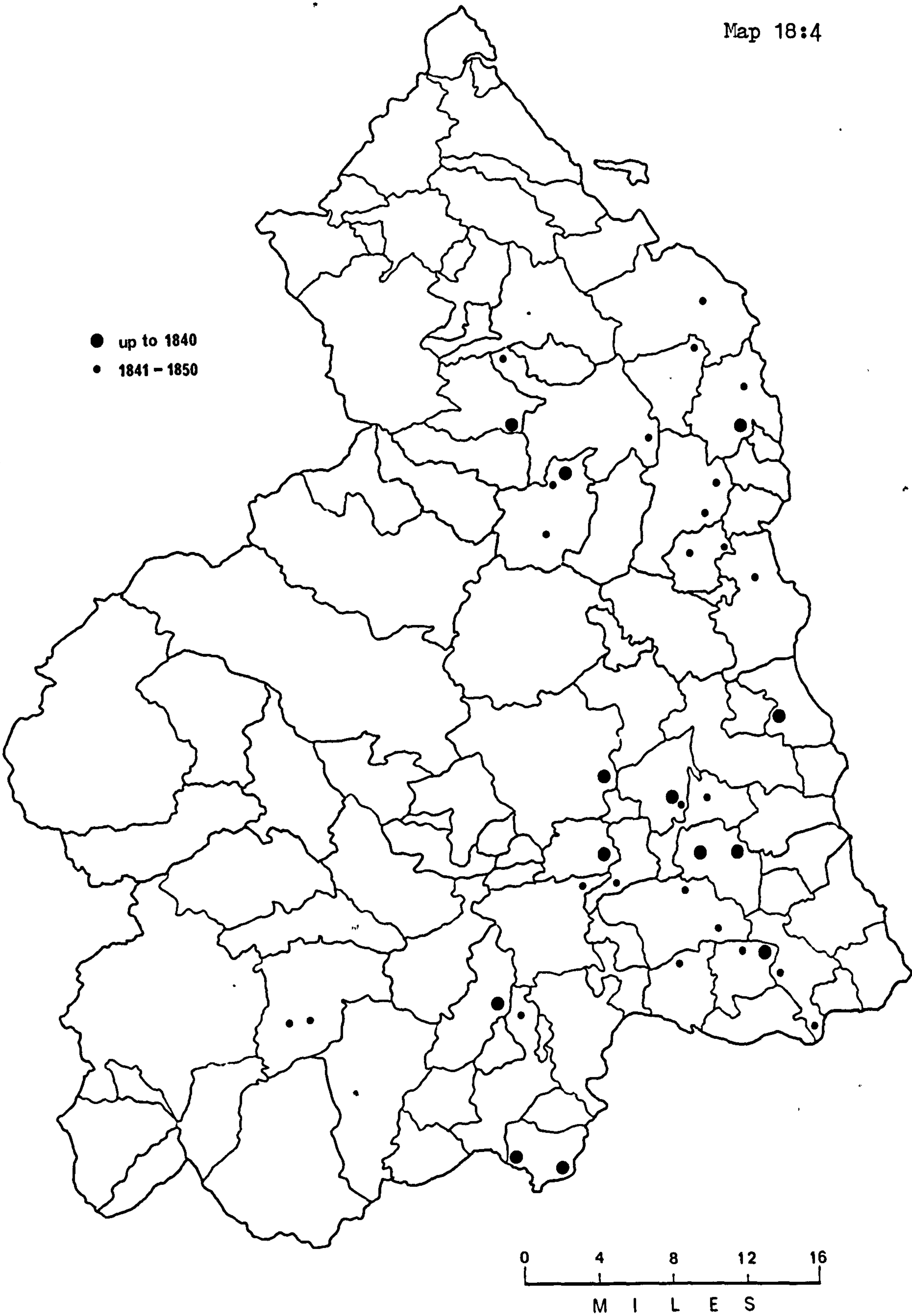
99 William Glover to Newcastle Farmers' Club, N.C., June 8th 1849.

100 N.C., Aug.24th 1799.

101 F.M., 24, 1823, p.506.

102 N.C., Oct.19th 1816.

Map 18:4



Distribution of Horse Rakes up to 1850.

Source: Newcastle Courant Farm Stock Sales
Advertisements to 1850.

Newcastle in 1769.¹⁰³ Although it was known that corn thus prepared went much further as animal food,¹⁰⁴ and they were offered in farm sales from 1815,¹⁰⁵ corn crushers were never common in farm stock advertisements before 1850. Neither were the very similar machines used to crush oil cake for consumption by cattle. These did not make their appearance before 1845. Implements to cut straw or turnips were introduced very much earlier and one was recommended by the Duke of Northumberland to his Commissioners in 1802. They replied, "we think it will Answer better for Tallow than Turnips as very few people make use of Cut Turnips, they are some times cut for Horses in the Spring but not by many people..."¹⁰⁶ The first to appear in a farm stock advertisement was in 1820 at the Prior Thorns Farm.¹⁰⁷ Like other barn implements, it was not until the late 1840s that straw and turnip cutters began to appear in any numbers and the assumption must be that they could not have been regarded as standard farming equipment before this date. Map 18:5 shows the north of the County to have possessed a very large percentage of straw and turnip cutters, a situation which emphasises the importance of breeding and feeding livestock in that area compared with the tendency to simply fatten stock further south. Breeding stock in the Hexham area and dairy cattle in the south-east may have been thought worthy of cut fodder and may account for most of what implements of this sort there were in the south. Table 18:5 shows the number of horse rakes, corn and oil cake crushers and straw and turnip cutters offered for sale on Northumberland farms before 1850.

103 N.C., Dec.9th.1769.

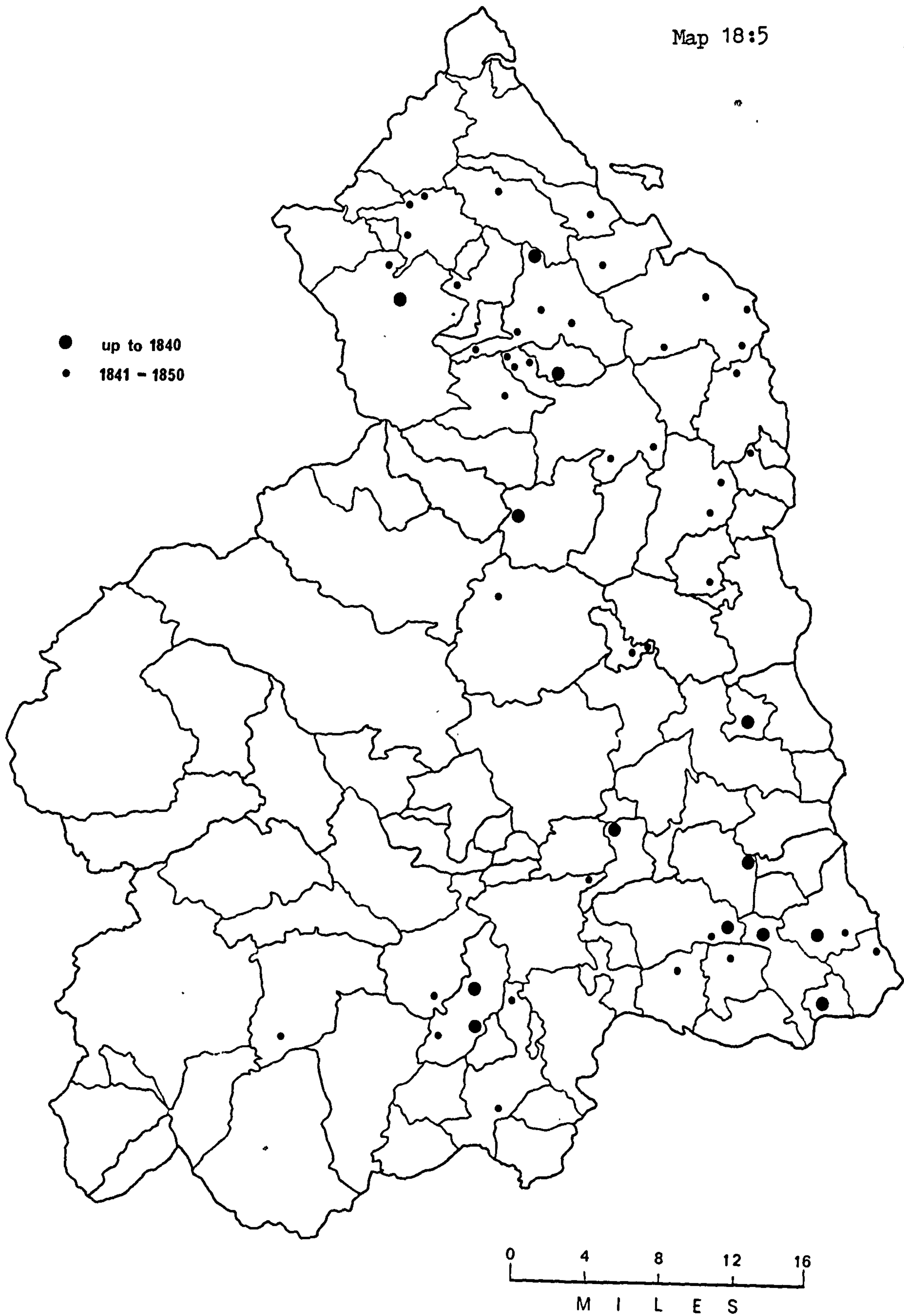
104 J.C. Morton, op.cit., 1, p.353.

105 Trewick Town Farm, Bolam, N.C., April 29th 1815.

106 Robert Forster to Duke of Northumberland, June 14th 1802.
AC/Z/1/9/b.

107 N.C., April 29th 1820.

Map 18:5



Distribution of Straw and Turnip Cutters up to 1850.

Source: Newcastle Courant Farm Stock Sales Advertisements to 1850.

Table 18:5

Numbers of various implements offered for sale
from Northumberland farms

	<u>Horse Rakes</u>	<u>Corn Crushers</u>	<u>Oil-Cake Crushers</u>	<u>Straw and Turnip Cutters</u>
1816-20	0	0	0	1
1821-25	3	0	0	0
1826-30	0	1	0	3
1831-35	3	0	0	3
1836-40	7	0	0	6
1841-45	6	4	1	8
1846-50	15	4	5	33

Source: Newcastle Courant Farm Stock Sales Advertisements
1816-1850.

When a new implement performed a function that could already be performed by existing implements, its adoption does not seem to have been rapid. The work of horse hoes or scufflers could be done by hand, or ordinary ploughs; that of grubbers or horse rakes by harrows; of scythes by sickles; of hay tedders, corn and oil cake crushers, straw and turnip cutters by hand. Consequently, their diffusion before 1850 was slow and by that date incomplete. The work of Crosskill's Clod Crusher in breaking clumps of soil could not be handled by any existing implement. Consequently, though it was first locally advertised only in 1845¹⁰⁸ and had been invented only shortly before, six such clod crushers are known to have been in use by 1850 and a Northumberland self-cleaning version of the implement was on sale by 1855.¹⁰⁹ Other implements would certainly have afforded useful solutions to local agricultural problems, but expense precluded their adoption. One such problem, how to remove turnips from heavy land, was solved by Captain Grey on his Home Farm at Howick by the installation of a portable railway.¹¹⁰ But such expenditure was uneconomic for the career farmer and it would seem that he thought money

108 N.C., March 7th 1845

109 J.C.Morton, op.cit., 2, p.762.

110 The Times, Nov.28th, 1851.

wasted that had been spent on implements to perform tasks that were inessential or could possibly be performed manually or by the use of existing implements.

The sort of improvements in implements that seem to have made the most headway before 1850 were the simplest, least expensive and most gradual changes. The improvements made in the common plough were accomplished in this way and probably had more effect in improving agriculture than the introduction or improvement of any other implement, including the threshing machine. Unfortunately it is not possible to trace this development, but it is possible to examine another simple and gradual change, from wooden or stone rollers to metal ones. The smooth roller was always standard equipment on farms and was usually identified as simply that, occasionally as 'wooden' or 'stone' roller, but increasingly as 'iron' roller. Table 18:6 shows the total numbers of rollers in stock advertisements identified as metal or iron and the percentage of total stock advertisements they comprised. It is clear that, as with the scuffling plough, this sort of obvious improvement to or adaption of standard, traditional farming implements was very much more important to the average Northumberland farmer during the first half of the 19th century than the addition of extra or luxury equipment.

There can be little doubt that agricultural improvements in Northumberland before 1850 bore no close relationship to the diffusion of latest farming implements. A lecture on improved implements delivered to the Newcastle Farmers' Club in 1847 ended with the anti-climax that most were "scarcely introduced into this neighbourhood in their improved form, namely, the cultivator or scarifier, the corn and manure drill, the horse hoe, the horse rake, the chaff cutter, the turnip cutter, etc".¹¹¹ Two years later, the same body heard that "the implements we have in use in this district are very inefficient, consisting of three: viz, the plough, the harrow and the smooth roller",¹¹² and in 1864, John Wilson, visiting

111 Joseph Laycock to Newcastle Farmers' Club, Oct.8th 1847. L.& P. Bolbec, N630.6/1.

112 William Glover to Newcastle Farmers' Club, N.C., Nov.9th 1849.

Table 18:6Numbers of Metal Rollers

	<u>Number of Metal Rollers Advertised.</u>	<u>Total Number of Stock Advertisements</u>	<u>% of Metal Rollers of Total Stock Advertisements.</u>
1816-20	5	280	2%
1821-25	5	241	2%
1826-30	16	303	5%
1831-35	22	363	6%
1836-40	20	299	7%
1841-45	46	335	14%
1846-50	47	414	11%

Source: Newcastle Courant, 1816-1850.

Northumberland, noted "the improved implements finding their way only to the hands of improving farmers... The same absence of auxiliary machinery is as noticeable in the homestead as in the field. Corn crushers and chaff cutters are rarely to be seen even in the most advanced districts".¹¹³ Even by 1850, Northumberland farming was not a mechanised industry. There is no greater difference between the concept of agricultural revolution and that of industrial revolution than the almost total lack of mechanisation in the former. Most farming tasks continued to be performed with what were no more than improved versions of very basic, traditional equipment. Despite all the clamour made by implement makers, agriculturists and societies, the only significant additions to the implement armoury of Northumberland farmers before 1850 had been the drill and the threshing machine.

¹¹³ John Wilson, op.cit., p.20.

XIX

SOWING TECHNIQUES

Drilling held two main advantages over the traditional method of sowing seeds broadcast. It generally meant greater economy in the amount of seed used and, much more important, that weeds could be easily, efficiently and often mechanically removed from between the rows of growing plants. This second advantage was especially important when crops were being taken from ground that should otherwise have been bare fallow, being pulverised and thoroughly cleansed for the remunerative grain crop which was to follow. In Northumberland, the main fallow crop was the turnip and if the land was to be made fit for the succeeding grain crop, the turnips had to be drilled.

Bailey and Culley claimed that the Northumberland method of drilling turnips on ridges had been introduced to the County from the Kelso area about 1780, and implied that by 1797 there were very few turnips still sown broadcast anywhere in Northumberland.¹ While this was probably so on the turnip soils of the north of the County on which both Bailey and Culley lived, there are good reasons for doubting whether the innovation had spread quite so rapidly over the whole County. In 1795, one Durham man made it very clear that farmers in the south had grave reservations about the drilling of turnips.

"Several land owners and farmers in this county [Durham] and also in Northumberland, for two or three years last past, have adopted the drill husbandry. I shall only make my remarks on this mode of husbandry for the last year. In the neighbourhood of Corbridge, Hexham, and other parts of Northumberland, the crop of turnips, in the drill way, was not worth 10s an acre; on the contrary, the crop, in the broad-cast way, was worth, on an average, £5 an acre.

1 Bailey and Culley, 1797, pp.42, 81; A.A., 14, 1790, pp.183,473;15,1791 p.628; 20, 1793, pp.162-6; George Culley to Arthur Young, c.1790, NCRO/ZCU/3.

A worthy friend of mine, William Thompson, Esq. of Corbridge, informed me that though he had made many experiments in the drill mode, some of which had answered, yet he found, by experience, that the broad-cast way was most to be depended upon. In this county, very few farmers pursue the drill husbandry as to turnips."²

Other evidence confirms this reluctance to accept turnip drilling.

William Todd wrote from Minsteracres in Bywell St. Peter in 1810 that "The sowing of the Burnt Land on Barlowhill w^t Turnips would be finished last night from the severe drought I considered to sow it first as it only could be sown broadcast and the Broadcast seed more likely to vegetate than the drill'd seed".³ Culley himself had admitted in 1793 to sowing turnips broadcast because they were much less likely to rot than those sown in drills,⁴ and a traveller passing south through Morpeth in 1812, having praised the crops of drilled turnips in the north of the County, remarked, "The turnips now begin to be improperly cultivated, being in most cases neither properly hoed nor thinned, nor are they drilled".⁵ It would seem that Bailey and Culley were guilty of a degree of exaggeration as to the extent to which the process of drilling turnips had diffused. When it is considered that as Reporters for the Board of Agriculture they had been allotted a double assignment, of describing both the actual agricultural practices of Northumberland and those they most recommended, such confusion is perhaps understandable.

It is possible to use information obtained from farm stock advertisements in local newspapers to derive more detailed information about the diffusion of this particular innovation, though the early acceptance of the method in the north of the County presents difficulties. Once an implement had become common in a locality, there was no longer the incentive to give it particular mention in an advertisement and the longer

2 A.A., 24, 1795, pp.104-5.

3 William Todd to George Silvertop, June 9th 1810; NCRO/ZCO/9/1.

4 A.A., 21, 1793, p.228.

5 F.M., 13, 1812, pp.196-9.

it had been established, the more likely it was to have suffered relegation to the 'all the other implements of husbandry' group contained in most stock advertisements. Difficulties were also presented by a large number of references to 'turnip machines' (which could have been turnip cutters or washers), 'turnip sowers' (most probably turnip drills, but conceivably a mechanised broadcasting method), 'sowers' (likely to have been for turnip in the north, but nor necessarily, nor definitely by the drill method), or simply 'machines' (usually winnowing, sometimes threshing, but occasionally turnip drilling). Only those advertisements in which the word 'turnip' was in conjunction with the word 'drill' or in which reference was made to 'double turnip sowers' were used to compile Table 19:1 and Maps 19:1 and 19:2. Table 19:1 compares the proportion of farm advertisements mentioning definite turnip drills by William Marshall's regions between 1808-20 and 1821-30. Not only do the north and the coast, areas which were growing most turnips at this period (see p. 319), appear to have had low concentrations of turnip drills, but these seem to have suffered a decline. This can only have been due to over-familiarity with the implement and consequent lack of precision in its description. The Tyne and Upland areas show the sort of increase which might have been expected of a successful and more recent arable innovation and these regions have received closer attention.

Table 19:1

Percentage of Turnip Drills in total number of Stock Advertisements
by William Marshall's 'Natural' Agricultural Regions

	1 8 0 8 - 1 8 2 0			1 8 2 1 - 1 8 3 0		
	Total Stock Sales	Turnip Drills	%	Total Stock Sales	Turnip Drills	%
North	33	3	9.1	53	4	7.5
Coast	75	6	8.0	82	7	9.7
Uplands	185	19	10.3	263	54	20.5
Tyne	60	7	11.7	58	22	37.9
Mountains	30	2	6.7	79	7	8.9
TOTAL	383	37		535	94	

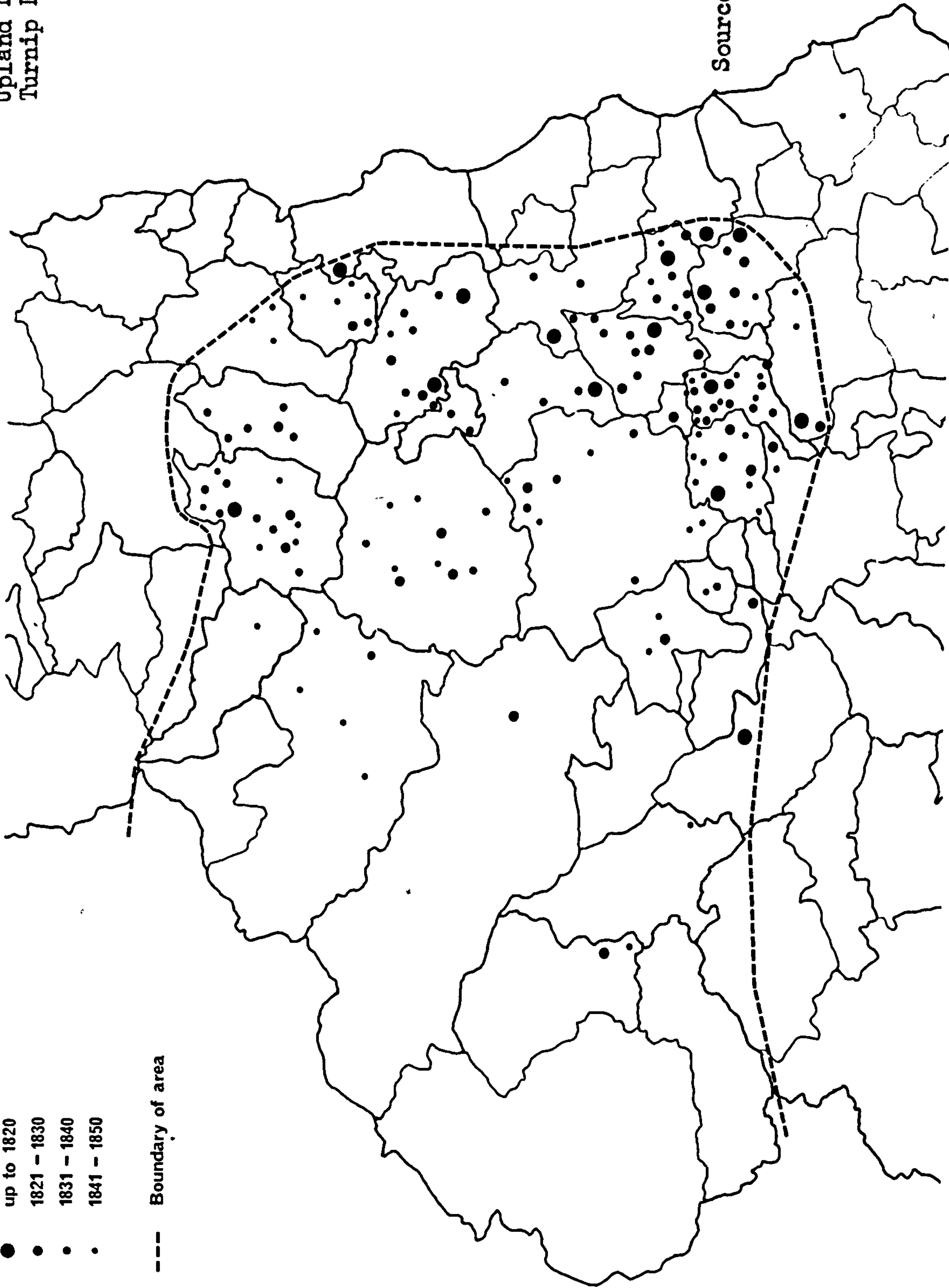
Source: Newcastle Courant, 1808-30.

Map 19:1

Upland Distribution of
Turnip Drills up to 1850

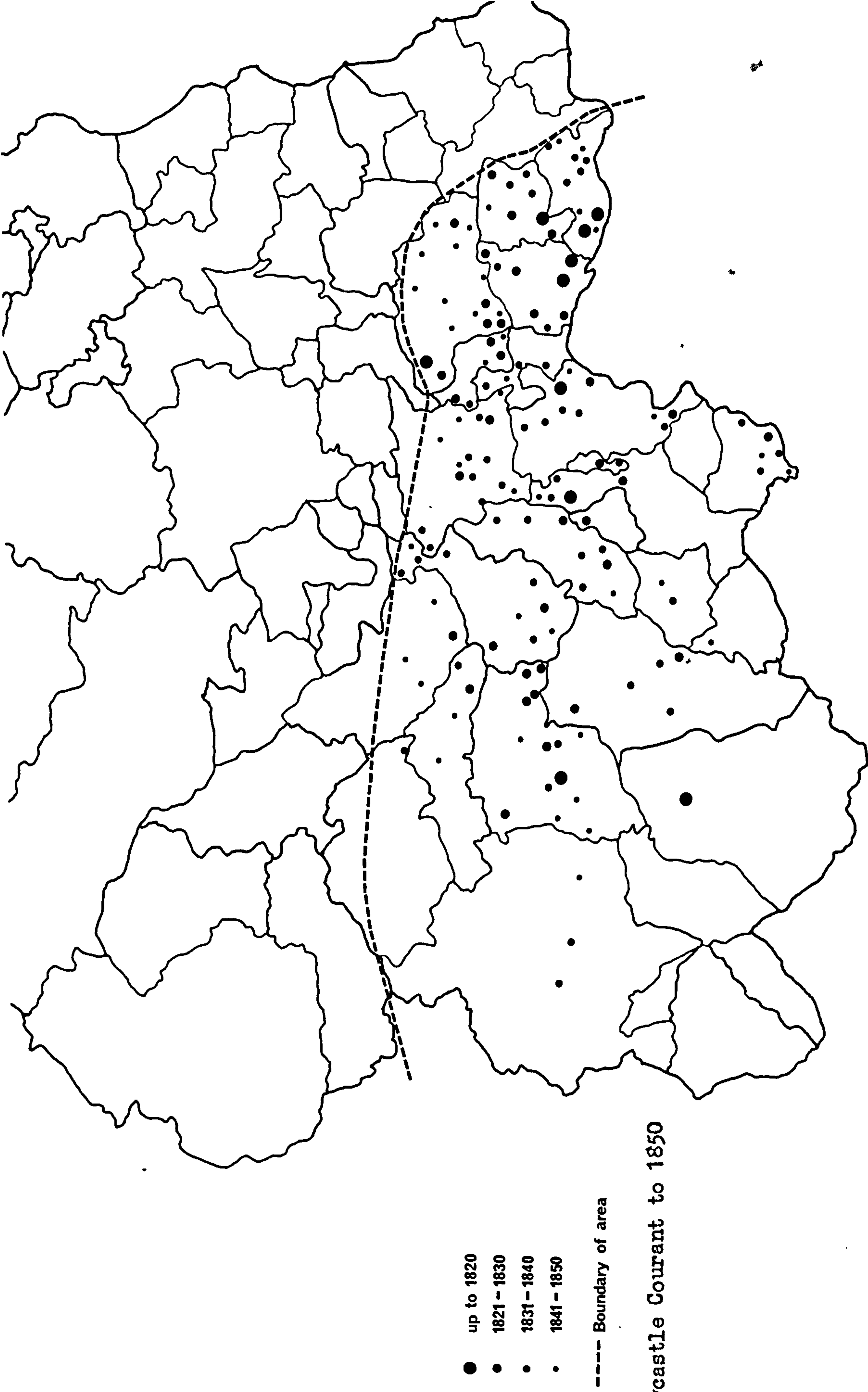
- up to 1820
- 1821 - 1830
- 1831 - 1840
- 1841 - 1850

--- Boundary of area



Source: Newcastle Courant
to 1850

Map 19: 2
Tyne Valley Distribution of Turnip Drills
up to 1850



Source: Newcastle Courant to 1850

Maps 19:1 and 19:2 show the distribution of definite turnip drills in these regions in decade groupings. The Maps, of course, reflect the importance and spread of turnip cultivation. Much of this land - with the exception of some on Tyneside - was not naturally light enough for turnips, but the developments of the first half of the 19th century not only made the cultivation of turnip relatively more profitable, but also made it possible on less and less promising lands (see pp. 320-23). With this advance, the parallel advance of an innovation well-tried and long-proven in north Northumberland and on the coast was almost automatic. Map 19:1 covers much of the upland area of Northumberland as well as moorland to the west. There were no vast areas particularly suited to turnip cultivation, although some districts, such as Whittingham and Chollerton, possessed patches of lighter soil. The region contained some of the least fertile soil in the County, yet the attractions of turnip cultivation led to turnips being forced on such lands. The distribution of turnip drills up to 1820 suggests that such forcing was originally limited to the lower and somewhat kinder soils nearer the coast. There then seems to have been a burst of enthusiasm for the turnip drill between 1821 and 1830, which carried on to much higher, more marginal land to the west. This earlier diffusion would seem to have been consolidated during the decade before 1840 and then to have progressed on to higher and even less auspicious land, particularly in Alwinton, Rothbury and Hartburn, in the period 1841-1850.

The situation revealed in the Tyne area on Map 19:2 is clearer. Distribution of turnip drills up to 1820 was generally limited to those areas nearest the river, with a heavier concentration in the east. By 1830, the turnip drill had again spread very much further, but there was still a tendency in the west to concentration in the immediate area of the Tyne that eastern areas seem to have abandoned by this time. The next decade revealed a further diffusion to the north and south, away from the river, and to the west, while the period 1841-1850 saw turnip drills in

use at their furthest distance yet from the valley floor, sometimes on land that was only marginally arable.

Table 19:2/A lists the percentage of those farms advertising implements for sale which mentioned definite turnip drills. It suggests that interest in the machine increased until the 1820s when it stabilised and remained roughly constant until mid-century.

Table 19:2

Percentage of Farm Stock Sales Advertisements Mentioning
A Turnip Drills
B Ribbing Ploughs

	No. of farm stock sales advertisements listing implements.	A		B	
		No. of Turnip Drills	%	No. of Ribbing Ploughs	%
1810-1815	96	10	10	0	0
1816-1820	100	24	24	1	1
1821-1825	84	37	44	5	6
1826-1830	133	57	43	13	10
1831-1835	176	83	47	21	12
1836-1840	164	69	42	38	23
1841-1845	166	64	39	54	33
1846-1850	253	102	40	79	31
TOTAL	1172	446		211	

Source: Newcastle Courant Farm Stock Sales Advertisements, 1810-1850.

Figure 19:1/A shows the information in more detail. The adoption curve reveals a very sudden acceptance of the innovation during the decade immediately after the Napoleonic Wars and this is followed by a relatively stable acceptance ratio with some decline in the 1840s.⁶ This pattern fits the general picture presented in the distribution maps, the local literary

⁶ cf. J.R. Walton, A Study in the Diffusion of Agricultural Machinery in the Nineteenth Century, Oxford Research Papers, 5, 1973. Walton makes no distinction between turnip drills and those for other crops, nor does he isolate the ribbing process from the drilling. Northumberland evidence indicates that the diffusion of drills was intimately related to the crop they were designed to sow.

Figure 19:1

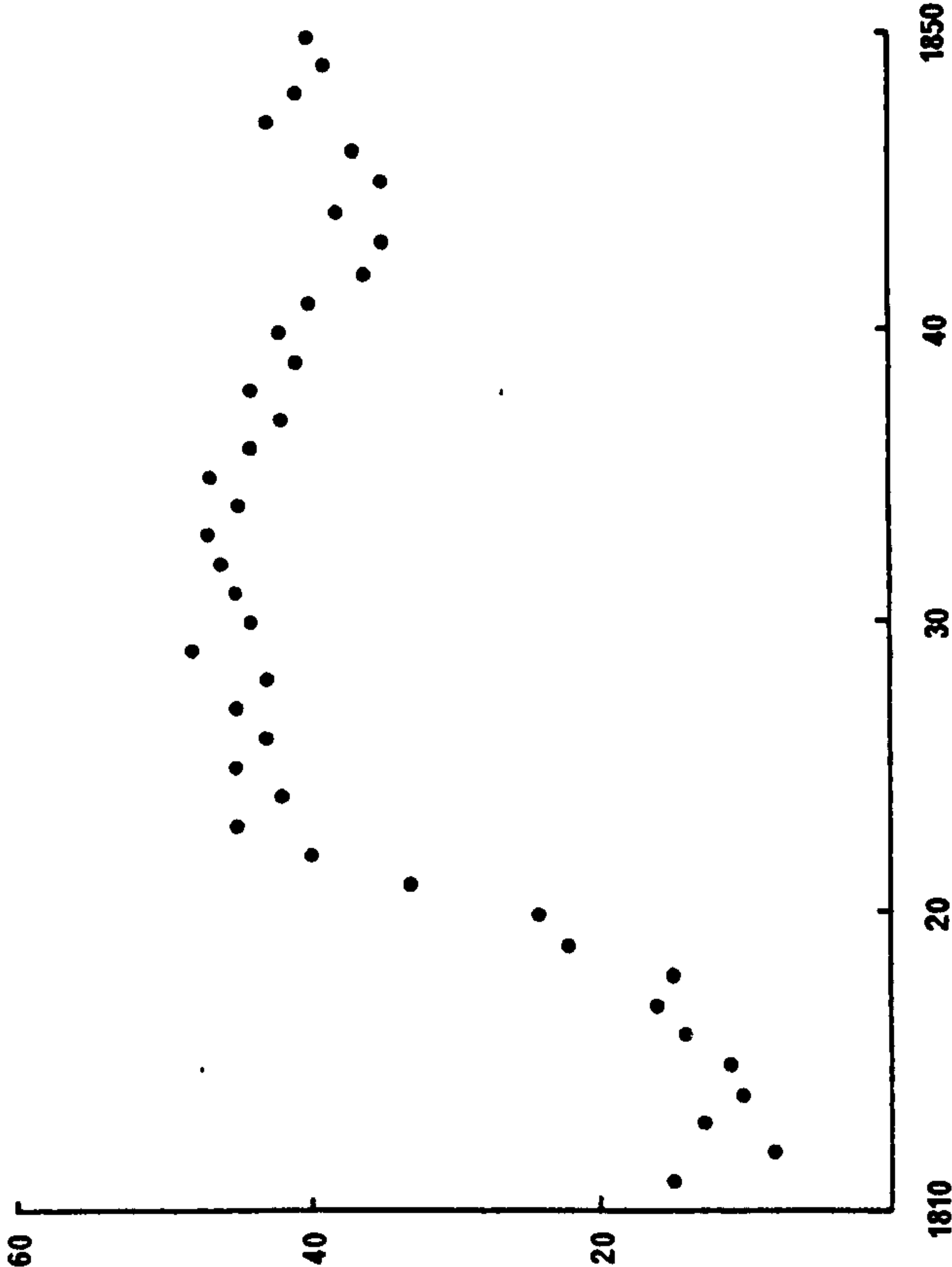
Adoption Rates of A Turnip Drills
B Ribbing Ploughs

(5 year running means)

A

Turnip Drills

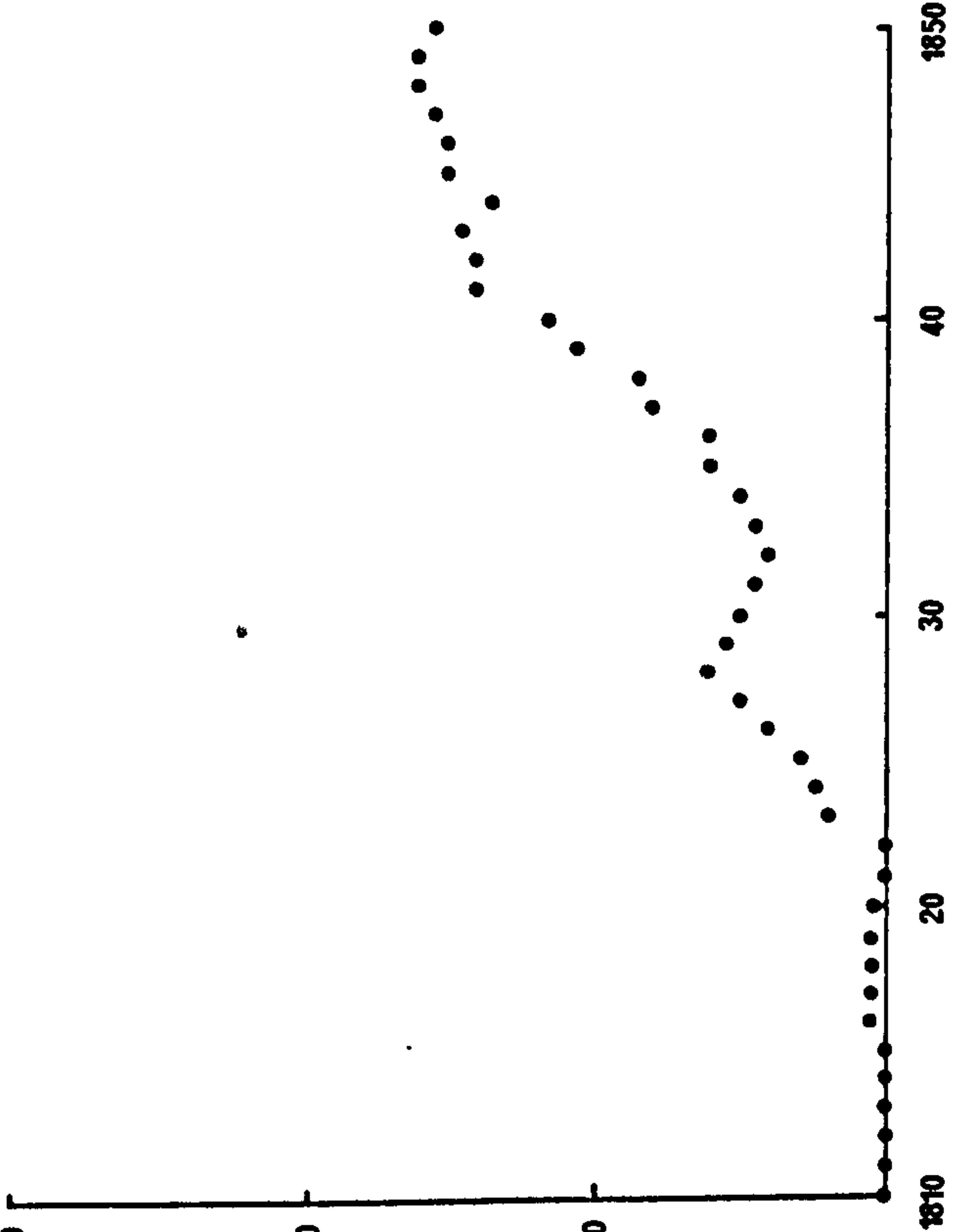
Per Cent
of Stock Sales
Listing Implements



B

Ribbing Ploughs

Per Cent
of Stock Sales
Listing Implements



Source: Newcastle Courant 1810-1850

evidence,⁷ the evidence on the spread of turnip cultivation and the thesis that familiarity eventually led to a serious decline of precision in the description of implements.

Beans and peas were grown mainly on the strong land along the coast and in the south-east and were often sown and reaped together (see p. 309). Both were fickle crops with yields varying enormously from year to year, particularly with harvest conditions. Both crops could be used to alternate with clover to avoid clover-sickness and this was their main function in the south of the County, where a four-course rotation meant reliance on a single year's growth of clover.⁸ This meant the sowing of a lush but often reluctant red clover.⁹ In the north, where rotations were commonly five-course, the lee was planned to last at least two years and greater use was made of the hardier white clover.¹⁰ Consequently, although beans and peas were also used in the north to assist the clover crop, that was never their primary function in this region. Instead they assumed another role on lands too heavy for the easy growth of turnips but on which bare fallow was still considered unnecessary and wasteful. Thus drilled beans and peas came to be used as fallow crops in north Northumberland, a part they could not generally play in the south. When this was done, subsequent fertility was apparently dependent on the lee being depastured with sheep, so that very heavy ground liable to induce sheep rot was regarded as unsuitable for bean fallow.¹¹

Bailey and Culley remarked that most beans were grown in the south of the County¹² and expressed their surprise in 1794 "that beans and pease were not drilled in all that extensive district along the coast,

7 There can be little doubt that by mid-century the turnip drill was in use virtually everywhere turnips were grown in the County. Vide John Grey, p.166; Seymour Bell, Collections Relating to Agriculture, NCL/L630; Walter White, Northumberland and the Border, 1859, p.213.

8 Thomas Colbeck; p.426; NCRO/ZMI/B41/7.

9 J.C. Loudon, Encyclopaedia of Agriculture, 1825, p.803.

10 A.A., 14, 1790, p.473.

11 Bailey and Culley, 1805, p.70.

12 George Culley to Arthur Young, Dec.8th 1790, NCRO/ZCU/3. A.A., 14, 1790, p.474.

where they are so much cultivated"¹³ and proclaimed, "The difference betwixt a naked fallow and a crop of beans, is too striking to need any elucidation".¹⁴ In 1788, Culley had written to Sir John Sinclair that "the Culture of Drilled Beans has now been so satisfactorily tryed in this District, as to put the advantage beyond a doubt",¹⁵ and in 1805, Bailey and Culley claimed that the drilling of these crops was confined to a few farmers in Glendale and on the Tweed.¹⁶ Marshall took note of this and praised the innovators for their ingenuity.¹⁷

Again, it is as well to check such assertions from Bailey and Culley. Map 19:3 shows the distribution of bean and pea drills at decade intervals as revealed by farm stock sales advertisements in the newspapers. Bean and pea drills were always rarer than turnip drills, but many no doubt remained undisclosed in advertisements in which they were described simply as 'drills' or as 'bean machines'. The former could have been drills for anything, though they were most probably turnip drills: the latter may well have been bean mills. Both were excluded from the map as was information that might have been derived from references to 'seed' or 'grain' drills. At no stage in their life cycle were beans or peas commonly referred to as either 'seed' or 'grain', though they were frequently labelled 'corn'.

The first newspaper sales advertisement definitely to mention a bean or pea drill appeared in 1811, and original interest in this mode of semination was clearly exclusive to the south-east, on the very coldest and heaviest arable land in the County. Other evidence suggests that the drilling of this crop had been attempted in this area, at Seaton Delaval in 1783, though obviously only experimentally, and that this crop was ribbed rather than properly drilled. "The Blew pease... were planted in Drills made with the Drill rake... One rigg of those pease were sowed

13 Bailey and Culley, 1794, p.58.

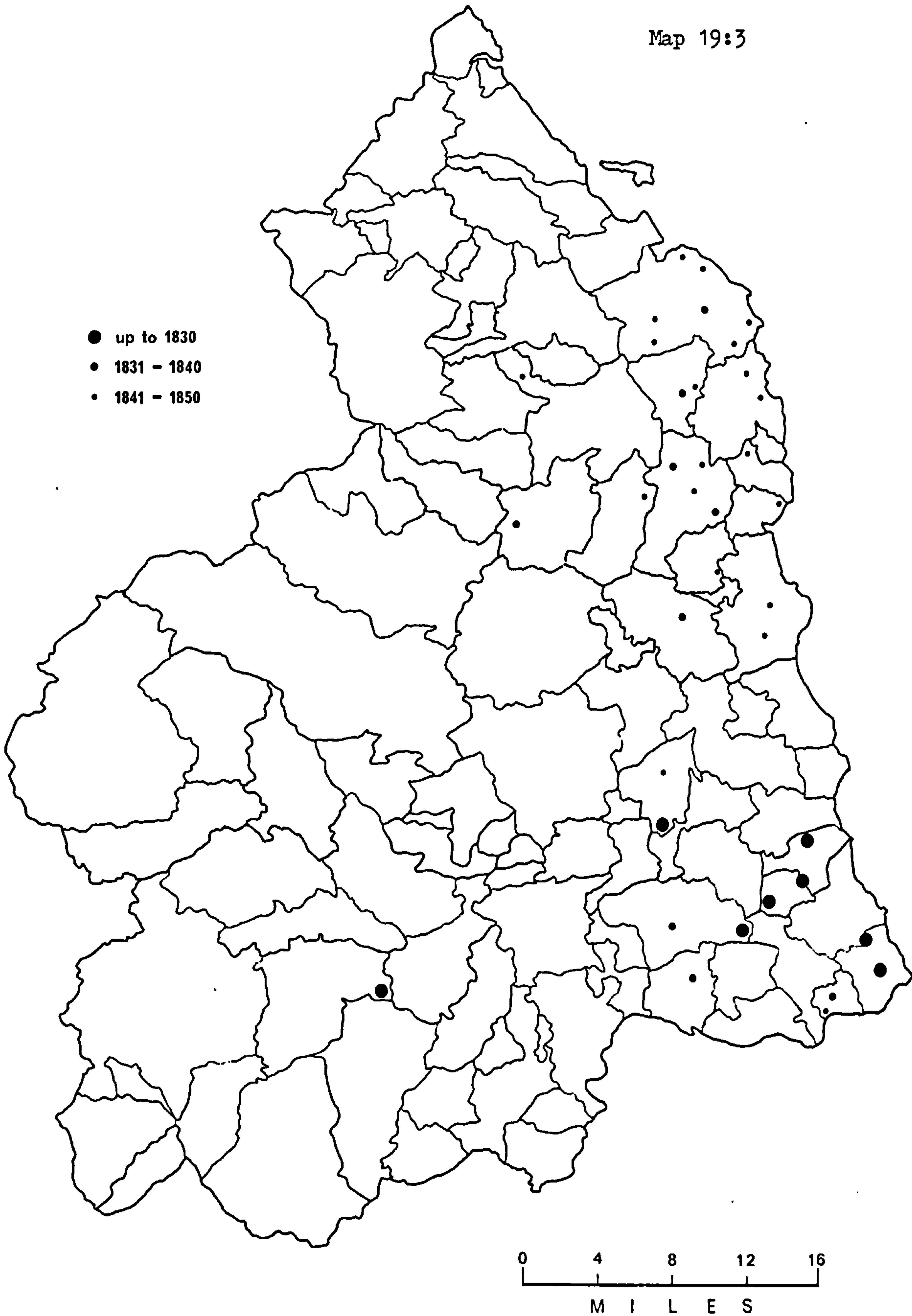
14 Ibid.

15 NCRO/ZCU/3.

16 Bailey and Culley, 1805, p.86.

17 William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 1808-18, p.79.

Map 19:3



Distribution of Bean and Pea Drills up to 1850.

Source: Newcastle Courant to 1850.

Broad Cast to try if there wou'd be any material difference betwixt that and the Drilled ones in produce... I think they will be planted too thick in the Drills at the beginning but were afterwards thinner [sic], as I am informed the same quantity would have sowed the Land Broad Cast."¹⁸

As has been seen, some drilling of beans and peas had been carried on in the coastal area to the south and Map 19:3 suggests it was very much more developed there before 1830 than on the northern coast. During the next two decades, the north clearly overtook the south as the bean's use as a fallow crop superceded its use as a stimulant for clover. Clearly, beans and peas grown largely for the benefit of clover were not sufficiently profitable: as a fallow crop they were. Hence, when Colbeck claimed in 1847 that beans were universally drilled on wheat soils,¹⁹ the change had taken place only where the ground was sufficiently light to allow of the replacement of the naked fallow by beans. This was in the northern coastal area; on the very heaviest lands of the south - in Earsdon, Horton and Cramlington, for example - this was not possible and no bean or pea drills were mentioned in this region after 1830.

Bailey and Culley made no mention of how grass or clover were sown, yet in 1841, John Grey asserted that they were universally drilled in north Northumberland and on the coast as far south as Warkworth.²⁰ The distribution map, Map 19:4, confirms this, especially when it is remembered that larger farm size meant that far fewer farm advertisements emanated from the northern third of the County than from the rest of it. The Map, in fact, traces all machines which were said to sow grass or clover seeds. It is likely that some of these were not drills but sowed broadcast. The only advantage claimed by Grey for the grass seed drill was its ability to sow evenly.²¹ That capacity could well have been achieved by a broadcast

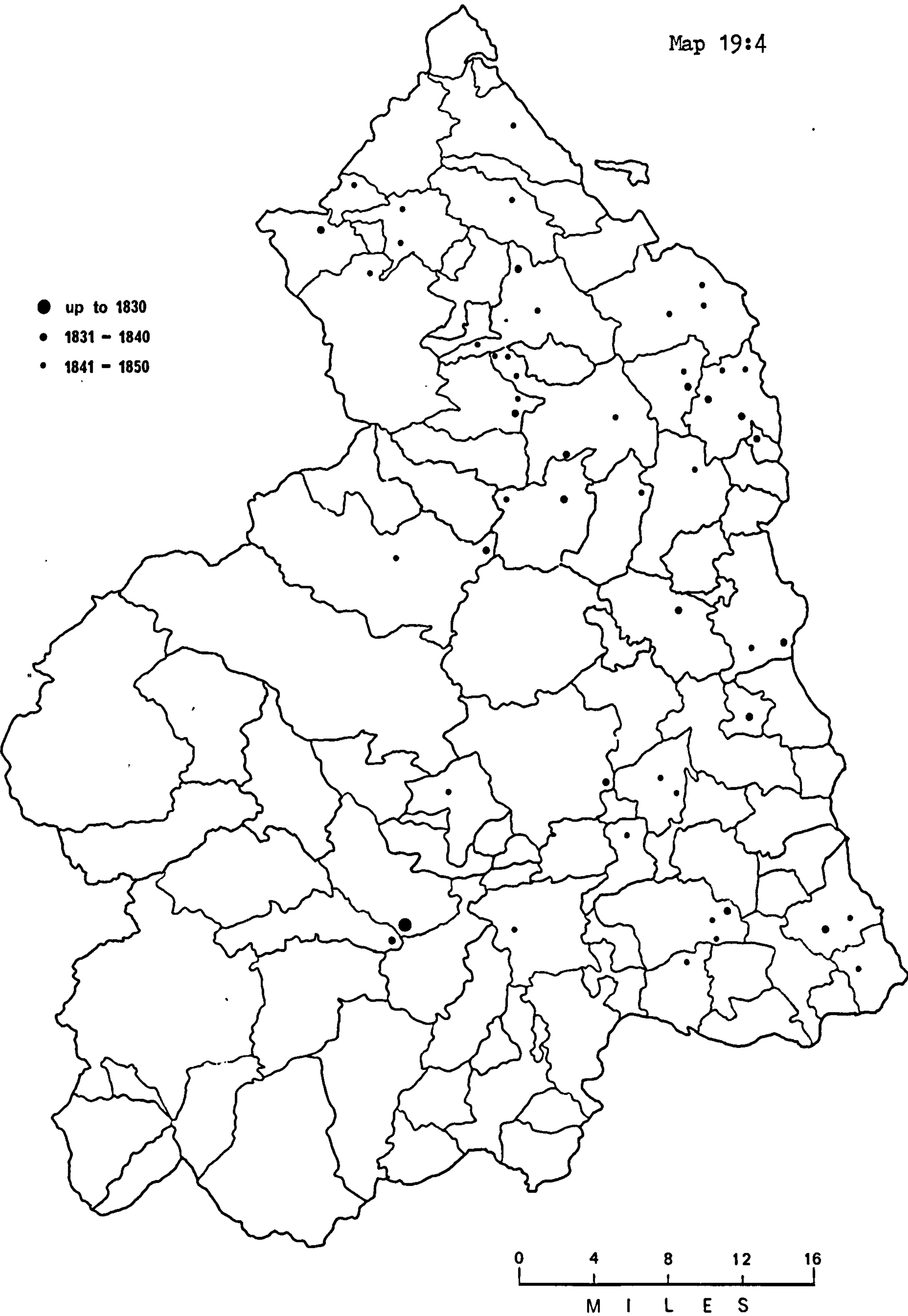
18 John Bryers to Sir John Delaval, April 4th 1783. NCRO/2DE/20/42.

19 Thomas Colbeck, p.426.

20 John Grey, p.172.

21 Ibid., pp.179-80.

Map 19:4



Distribution of Clover and Grass Sowers up to 1850.

Source: Newcastle Courant to 1850.

machine. Samples are too few and terminology too indistinct to differentiate between the two on a map; consequently Map 19:4 shows only the degree of mechanisation employed in the sowing of such seeds. It is quite clear that, though virtually all the permanent arable lands of the County incorporated temporary grasses in their rotations, the north was generally much more developed in the perfection of their semination.

Though turnips, beans and peas and clover were said by some to have been universally drilled in the County by 1850, no one made this claim for corn. Here the drillists faced their staunchest opposition and a most formidable argument, that broadcast corn often produced higher yields.²² Those who could see the reason for keeping the land clean during the growth of a fallow crop were often hard put to see why it should necessarily be kept quite so clean during the growth of the corn crop. After all, the corn crop was the cash crop, the one that so much of the fallow preparation had been for. Had drilling produced more corn, it would have been readily accepted: as it did not, many quite naturally regarded it as an unnecessary risk. In the mid-19th century, it was said of Northumberland that "Wheat is sown broadcast either by the hand or by machine, it does not allow of any weeding or other cultivation after it is sown save the cutting down of thistles or other large weeds which may be growing above the blade in the spring".²³

The first corn drill in the farm stock sales advertisements appeared in 1813. Ten corn sowing machines were recorded up to 1830, nine of which were definite drilling machines. Between 1831 and 1850, 28 machines were mentioned, but only 16 of these were definitely drilling machines. So few corn sowers could hardly have engendered sufficient familiarity with the drilling machine to have caused such reduced clarity, and another reason for their scarcity was sought. An advertisement relating to the

²² Ibid., p.180.

²³ Thomas Bell's Notes, c.1850, NCRO/ZHE/34/1a.

farm of Fenwick Granary in Kyloe in 1844 specifically mentioned broadcast corn sowing machines, though there were corn drills as well. It seems that machines to broadcast corn were distinctive to Northumberland and parts of southern Scotland by about 1830 and that these achieved some measure of popularity.²⁴ When Andrew Grey wrote of discovering a "means of seminating land exactly with grain" being "a desideratum of modern husbandry" in 1808, he was referring not to drilling, but to broadcasting.²⁵

Bailey and Culley's only reference to the drilling of wheat occurred in a footnote to a passage about wheat being sown broadcast. Predictably, it read "Upon Wark farm [Culley's own], and a few others in Glendale, drilling both barley and wheat, and hoeing them, has been found an excellent practice for destroying annual weeds".²⁶ The 1797 and later editions reiterated that only a few farmers grew barley in drills - again in Glendale Ward.²⁷ The Report made no mention of the drilling of oats - a very difficult process because of the shape of the grain - and one wonders if Marshall had tongue in cheek when he reviewed the Report and wrote, "As no mention is made of the quantity used in drilling, are we to infer that oats are not drilled in Glendale Ward?".²⁸ The inference was probably correct then, but at least some oats were being drilled in Northumberland by 1841.²⁹

The distribution of corn drills on Map 19:5 suggests that their use was far from great in any part of north Northumberland before 1830. Nor had corn drilling made many converts in the Hexham area at this time.³⁰ Grey thought that the north and the coast as far south as Warkworth did not generally use corn drills because the land was already clean enough as a result of the turnip fallow. Corn drills, he claimed, were only of

24 Quarterly Journal of Agriculture, 2, 1829-31, pp.248-9.

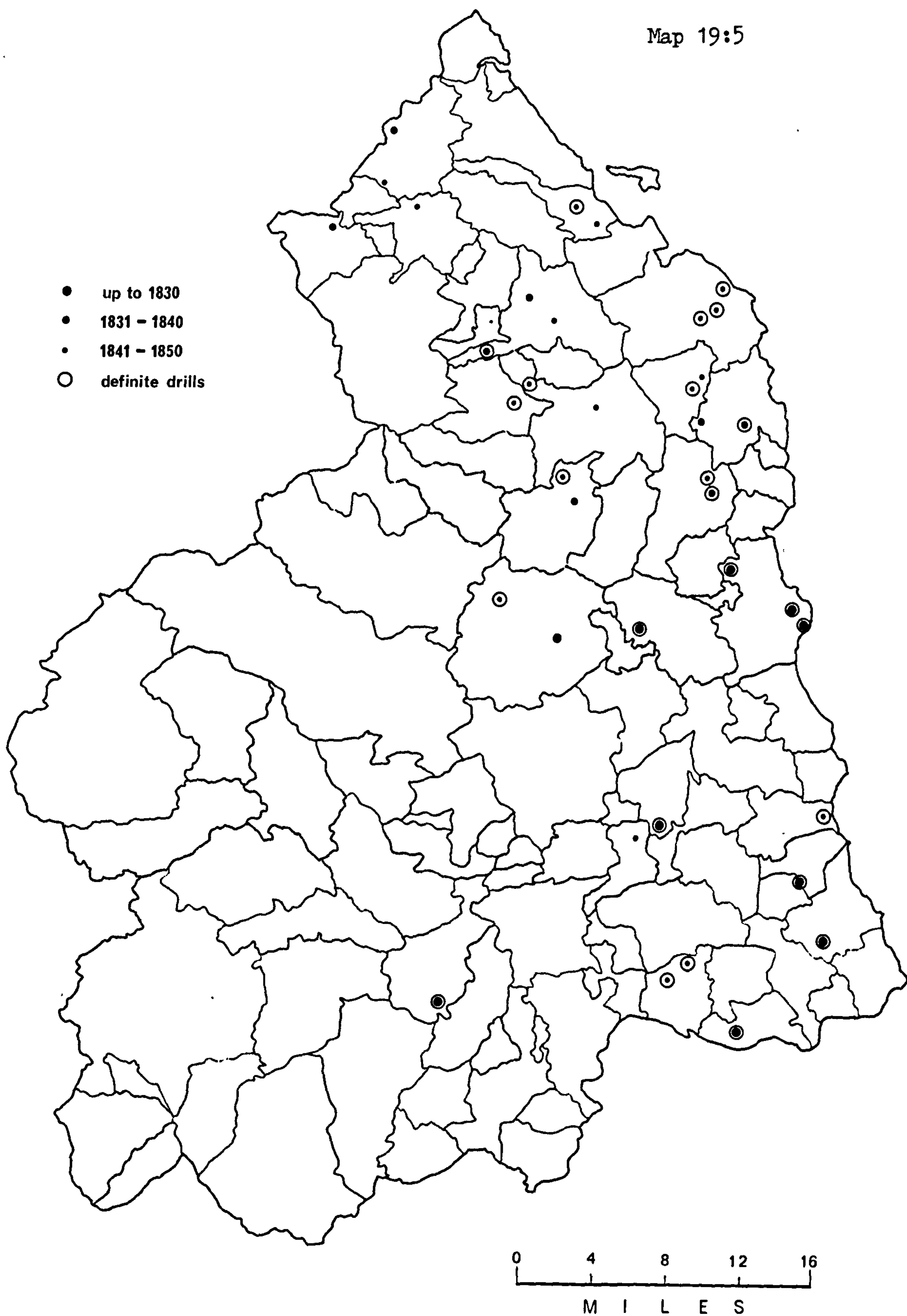
25 Andrew Grey, The Plow-Wright's Assistant, 1808, p.171.

26 Bailey and Culley, 1794, p.32. 27 Ibid., 1805, p.81.

28 William Marshall, op.cit., p.78. 29 John Grey, p.162.

30 A.B. Wright, History of Hexham, 1823, p.12.

Map 19:5



Distribution of Corn Sowers up to 1850.

Source: Newcastle Courant to 1850.

use where there would otherwise have been many weeds amongst the corn.³¹ Given then that the several accounts of the weedy fallows typical of the south-east were not all incorrect,³² it is hardly surprising that the earliest concentration of corn drills should have been in this area and that they should specifically have been drills rather than corn sowing machines. The partial adoption of mechanised corn sowing by the north came only after 1830. For the north of the County, the only interest was even sowing and for that purpose a broadcast machine was as welcome as a drill. Table 19:3 puts the numbers of corn sowers, grass and clover sowers, and bean and pea drills into some perspective. None of these played more than a minor part in Northumberland agriculture in the first half of the 19th century.

Table 19:3

Numbers of Bean and Pea Drills and Corn, Clover and
Grass Seed Sowers

	No. of farm stock sales mentioning implements.	No. of bean and pea drills	%	No. of Clover and grass sowers	%	No. of Corn Sowers	%
1811-1820	189	1	.5	0	0	5	2.5
1821-1830	217	7	3	1	.5	5	2.5
1831-1840	340	9	3	17	5	7	2
1841-1850	419	20	5	34	8	20	5
TOTAL	1165	37		52		37	

Source: Newcastle Courant to 1850.

The drill machine was not the only way of depositing corn in rows. A ribbing plough could form the soil into small ridges eight to nine inches apart, the shape of which would cause broadcast corn to fall into rows. The method was often referred to as 'drilling' and it is wondered how many drill ploughs were in fact 'ribbing' ploughs. Although the newspaper

31 John Grey, p.164.

32 e.g. The Times, Nov.28th 1851.

advertisements made many references to ribbing ploughs, such an implement was merely a small, narrow-bottomed swing plough with double mouldboard and was not, therefore, particularly specialised. An ordinary double mouldboard plough or any small swing plough could probably have done the job. Only those actually termed 'ribbing' ploughs have been plotted on Map 19:6.

The ribbing method was, surprisingly, not cheaper than drilling as much preparation and pulverisation of the soil was necessary before neat ribs could be formed.³³ Hence, it was unsuited to the strongest clay land, but attractive for slightly less tenacious soil in that grain was deposited at greater depth than by the drill, rendering it more likely to flourish and survive heavy land's tendency to throw out seed. Weeding was only slightly more difficult in that the corn's alignment was less perfect than when deposited by the drill machine. Yields were estimated to have been little different from those gained by drilling or broadcasting.³⁴

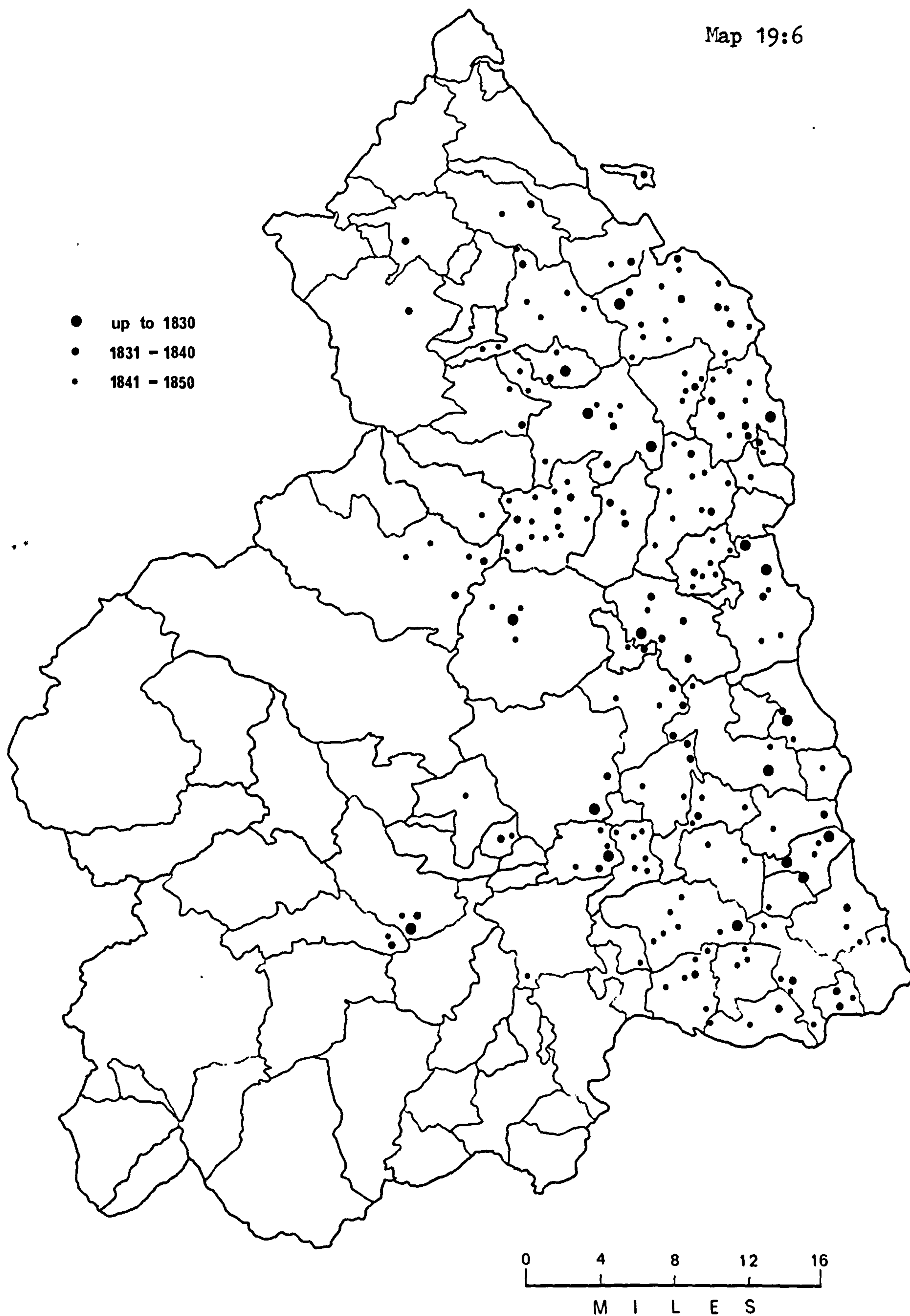
Consequently, in that the ribbing method was attractive for heavy land despite the pulverisation needed, and attractive for lighter land using turnip rather than naked fallow, because much of the pulverisation had already been accomplished under the turnip fallow, it was acceptable to large areas of Northumberland, spreading evenly and generally throughout its arable parts and latterly apparently into some districts, such as parts of Chatton, Alwinton, Kirkwhelpington and Whittingham, which were only marginally so. The Tyne Valley upstream from Heddon seems to have been the exception, as indeed it was for corn drills. This is contrary to other evidence which states that the ribbing of corn had been introduced to the Bywell area about 1810 and that it was gaining ground in that area by 1814.³⁵ However, the newspaper advertisements suggest that ribbing had, in fact, gained very little ground in any part of the County as late as

³³ John Grey, p.164.

³⁴ F.M., 15, 1814, p.52.

³⁵ F.M., 24, 1823, pp.220-1

Map 19:6



Distribution of Ribbing Ploughs up to 1850.

Source: Newcastle Courant to 1850.

1830 (see Table 19:2/B). Evidence for the Tweedside region suggests that the drill machine had gained some popularity for corn sowing by the 1820s, and had not been surpassed by the ribbing method.³⁶ Map 19:5 lends support to this. With these exceptions, Map 19:6 seems to illustrate an example of the widespread gradual acceptance of an implement that, for different reasons, was suited to a wide range of soil types. It would seem that these conditions, in this case anyway, produced a much shallower adoption curve (see Figure 19:1/B) than that for turnip drills, with a small premature peak in the late 1820s and a levelling off in the 1840s.

The application of newspaper advertisements to show the diffusion of sowing techniques emphasises some important points. First, that their use without the parallel use of much other local evidence would yield either sparse results or conclusions likely to be as erroneous as those which would emanate from much of the other evidence were that used in isolation. Bailey and Culley show that 18th century man did not think accurately in terms of the diffusion of innovation. Great care, therefore, has to be taken not to misapply evidence, and for this reason the most definite identification of implement types must be sought. Second, that agricultural conditions are unlikely to produce the sort of uniform surface with which Häggerstrand worked³⁷ and, therefore, for this reason as well as the limitations imposed by the nature of historical evidence, his methods are likely to be inappropriate. Third, that there is no merit in thinking in terms of drills in general when the farmer of the 19th century was interested only in the practicability of drilling specific crops. For this reason, drills for each crop must be considered in terms of total agricultural function. For example, the bean drill was of little use in Glendale because few beans were grown. It was useful in the south-

³⁶ F.M., 15, 1814, p.52.

³⁷ T. Häggerstrand, *Innovation Diffusion as a Spatial Process*, 1967; 'The Propagation of Innovation Waves', *Lund Studies in Geography*, B, 4, 1952.

east where beans were needed to revive clover lands, but not when the growing popularity of turnips there made clover less precious. It was useful in the northern coastal area, but somewhat later and then probably to sow beans as a fallow crop, not to relieve flagging clover land. The problems of innovation within agriculture are unlikely to be resolved without detailed consideration of the agricultural world in which the change was taking place.

XX

THRESHING MACHINES

The purpose of threshing is to separate grain from straw; the purpose of the machine was to replace the flail, the only tool previously used for this purpose. Hence the threshing machine was potentially of use on any arable holding, though its importance to agriculture was based on other factors as well. In the late 18th and early 19th centuries, it was easily the most complex and the most expensive piece of agricultural equipment in existence.¹ The threshing machine was the only agricultural implement to rival the technology of contemporary industry; it was outstanding in a world of harrows and one-horse carts. While other agricultural machines were valued in pounds and shillings, the threshing machine cost tens, and more usually hundreds, of pounds. Not only did the machine thresh, but it also permitted the mechanization of other farming processes and encouraged the application of steam power in agriculture long before the steam plough. No implement was of comparable importance to farming until the appearance of the tractor.

The threshing machine is also of no small interest to those engaged in the investigation of agricultural progress. It is rare to be able to attribute any agricultural development to a precise date and origin, for an implement to have been so different and important that it made impact enough to produce traceable and sufficient records, and for an agricultural machine to have been so satisfactory in its operation that it remained substantially unaltered throughout the period under consideration. Consequently, the threshing machine deserves the closest attention in a study of agricultural development and innovation and it is remarkable

¹ Arthur Young called it "by far the most capital mechanical invention in husbandry that has appeared this century". A.A., 20, 1793, p.248.

that so little interest has hitherto been shown.²

The threshing machine was invented in 1786 at Kilbagie in East Lothian by Andrew Meikle.³ Other machines capable of threshing corn were contrived both before and after this date,⁴ some of the earliest in Northumberland itself,⁵ but the Meikle version was unique in being sufficiently refined to thresh thoroughly and cleanly, and strong enough to remain intact during the process. The Meikle or Scotch threshing machine worked on the beating and scutching principle (see Appendix) and could derive its power from horses, wind, water, steam or any combination of these.⁶ The power source was more important than it might at first seem. With sufficient power, various additions could be made to the basic Meikle thresher. One of the earliest - and probably a Northumbrian improvement - was the circular rake, designed to retain some order amongst the threshed straw and to allow it to part with the last grains.⁷ The winnowing machine ('fanners') beneath the bulk of the threshing machine proper was also general, but other additions, such as barley hummellers, chaff and turnip cutters or grindstones, were very frequently made, provided there was ample power for them to function.

2 Perhaps the most informative works on the subject are E.J.Hobsbawm and G. Rude, *Captain Swing*, 1969, especially pp.359-363; E.J.T.Collins, 'The Diffusion of the Threshing Machine in Britain 1790-1880', *Tools and Tillage*, 2(1), 1972, pp.16-33; Sir William Tritton, 'The Origin of the Thrashing Machine', *The Lincolnshire Magazine*, 11, 1, 1934, pp. 7-12; 2, 1934, pp.53-56.

3 Bailey and Culley, 1805, pp.49-52 or F.M., 4, 1803, p.128.

4 J.A. Ransome, *Implements of Agriculture*, 1843, pp.137-73.

5 Thomas Common of Shilbottle invented a hand threshing machine in 1769, (N.C., April 15th 1769), Mr Ilderton of Hawkhill was using a water-powered machine of his own design in 1770 (the best description of this is in a letter from Thomas Daly, N.C., Dec.29th 1798), Mr Oxley a horse-powered machine at about the same time at Flodden and Mr Gregson of Wark a hand-powered machine (Bailey and Culley, 1805, pp.49-50). John Raistrick of Morpeth was producing the same sort of threshing machine as Meikle in the 1780s and claimed to be its inventor. His case is most concisely expressed in his letter to the Newcastle Courant, Aug.25th, 1810.

6 Andrew Grey, *The Plough-Wright's Assistant*, 1808, pp.215-216.

7 Bailey and Culley, 1805, p.61.

Where the power supply was one or two horses, it may be doubted whether power was sufficient and whether a farmer dependent on such a source was able to make maximum use of the machinery.

The threshing machine of the 18th century was not capable of construction by just any local blacksmith or wheelwright. One important reason for their lack of popularity in some parts of England was the failure of the attempts of parochial amateurs. "Almost every mechanical knave has been tempted to set up the trade of making them: there are swarms of them, therefore, not worth a shilling".⁸ In the south of England, the initial enthusiasm of the 18th century for the machine was replaced by a profound lethargy in the early 19th. In Gloucestershire, the machines were "of a most clumsy and inefficient structure" which "was the case over the whole of that large and rich country. The mills were constantly liable to go into disorder; and, when that happened, there was not a single individual in the whole district capable of putting them again in repair".⁹ Mr. Parker's foundry at Stourport was still making castings and wood patterns for threshing machines in 1808, but a correspondent of the Agricultural Magazine did "not know any particular workman who now professes making and erecting them".¹⁰ Knowledge of and interest in the threshing machine were common enough: skilled men with knowledge enough to build an efficient machine were not. "I intend planting one of thease said thrashing machines if at all which I must see before I dare engage I believe - 10 of us was about agreeing to have A man come up to Execute each of us one but fail'd in the Attempt..."¹¹ In fact, there seem to have been comparatively few men accomplished at the art. Most of the authors of the County Reports to the Board of

8 Thomas Stone, A Review of the Corrected Agricultural Survey of Lincolnshire by Arthur Young, 1800, p.75.

9 William Tennant, 'On Scots Agriculture', F.M., 11, 1810, p.177.

10 Letter from J.B.Turner, Dec.26th 1807, A.M., 9, 1808, pp.161-167.

11 Letter of S.Deverill to George Culley, Sept. 8th 1791.NCRO/ZCU/16.

Agriculture thought it worthwhile to recommend an individual - often not a local - who was proficient in the construction of threshing machines. A total of 53 different builders' names is mentioned in all editions of all the Reports and it is obvious that some men were active in many widely-separated areas. Only two men¹² are known to have been building threshing machines in Northumberland in the 18th century, though there must have been many more. John Raistrick, 'Civil Engineer' of Morpeth, was easily the more famous, if only because of his eccentricity.

Raistrick is known to have constructed threshing machines in Oxfordshire,¹³ the North¹⁴ and East Ridings,¹⁵ Stirlingshire,¹⁶ Chichester and Wimbledon,¹⁷ Sunderland¹⁸ and Norfolk¹⁹ and even conducted some business from a London office.²⁰ This activity may not have been absolutely typical of all Northumberland threshing machine builders, but it does suggest that the machine's construction was, at least initially, a task requiring specialisation on the part of the builder. Where such men were lacking, the diffusion of threshing machines was likely to have been delayed: where men inadequate to the task were at work, they may have created a positive disincentive to innovation.

The advantages claimed for the threshing machine were numerous. Not only was it cheaper than flail threshing,²¹ but in executing the work

12 Michael Elliot of Hexham (W.Mayor, *Agriculture of Berkshire*, 1809, p.129) and John Raistrick of Morpeth (NCRO, *Morpeth Collectanea*, vol.2.)

13 Arthur Young, *Agriculture of Oxfordshire*, 1809, p.81.

14 John Tuke, *Agriculture of the North Riding*, 1800, pp.81-2.

15 H.E. Strickland, *Agriculture of the East Riding*, 1812, p.88.

16 A.A., 15, 1791, pp.481-4

17 A.A., 17, 1792, p.168.

18 A.A., 15, 1791, p.490.

19 Letter of William Mure to George Culley, June 14th 1793. NCRO/ZCU/18.

20 "Mr. Raistrick, of Northumberland, and of No.15, Charing-Cross, is decidedly the first mechanic in this line, as also for the making of Churns." Thomas Stone, *op.cit.*, p.75.

21 Estimates of the cost varied enormously, from 1½d per quarter (A.A., 20, 1793, pp.248-51) to 7d (William Dickson, *Practical Agriculture*, 1814, pp.46-7) or 1/- or more (A.A., 23, 1795, pp.438-9), but most commentators agreed that machine threshing was cheaper than flailing. Where doubt was expressed, it had usually been aroused by the inefficiency of small machines. See, for example, F.M., 4, 1803, p.502.

more rapidly, it allowed the individual farmer greater command of the market. "We have sold wheat as fast as we could get it threshed, Why? we think the Prices are likely to be lower; Seed time and good weather prevent Threshing."²² The machine also permitted a great deal of work to be done on those days when weather conditions were too inclement for outdoor activities. "Since the introduction of these mills, the grain is thrashed by the ordinary servants on the farm, and without in any material degree obstructing the operations in the field; farmers in general employing their men and forces in this business in bad weather when other operations cannot be carried on."²³ More grain was said to result from machine threshing²⁴ and working conditions for farm labourers were supposedly healthier.²⁵ Other advantages claimed were that the machine made pilfering by employees or vermin more difficult, that it avoided deterioration of corn through storage, that damp corn could be processed, that it was more efficient in separating the grain, straw, chaff and small grain, and that corn affected by smut could be rendered perfectly acceptable because the machine did not crush the smut balls.²⁶

But there were strong bodies of opposition to the threshing machine in many parts of the country. It was argued that the initial expense of a large machine was prohibitive. "Thrashing-machines are to be met with in different parts of the county [Warwick], but in general on a small scale and in the manner they are constructed, can do very little work. Mills of two horse-power will never answer; four horse power is found little enough to thrash, shake the straw, and winnow the grain; and without they are constructed so as to perform all these operations, they

22 Letter of Matt. Culley to John Welch, Dec.1st 1801. NCRO/ZCU/6.

23 R.W. Dickson, Practical Agriculture, 1810, p.47.

24 William Lester, A History of British Implements and Machinery Applicable to Agriculture, 1811, p.152.

25 Ibid., p.107.

26 Sir John Sinclair, Husbandry of Scotland, 1812, p.83.

are not worth having."²⁷ Prices quoted for threshing machines varied enormously. Some cost as little as £20, but they were usually hand-operated and were not popular.²⁸ Nor indeed were many somewhat larger machines. "A slight mill, constantly breaking, and with no fanners, no farmer would accept as a present."²⁹ Even when the power source was named, it is not generally possible to tell whether the price included all the appendages to the machine, the barn work and the materials necessary to harness the power. It would seem that a threshing machine of four-horse power cost about twice as much as one of two-horse,³⁰ and it is likely that machines operated by six or eight horses cost at least proportionally more.³¹ Certainly the largest threshers, requiring water, wind or steam to drive them, were in a totally different category from the hand or one- or two-horse threshers and some certainly cost over £1,000 in the early 19th century.³² Consequently, the initial capital outlay required serious consideration and must have discouraged many farmers. Those who risked less money on smaller machines may well, in the end, have lost more. "I shall here take the liberty of advising every person about to erect a thrashing machine, to beware of economy. I set out on that plan, and what with the alterations and amendments, the machine has cost me as much as a powerful, well-constructed one would have done at first and , after all, is not the thing."³³

27 Adam Murray, *Agriculture of Warwickshire*, 1815, pp.59-60.

28 See a letter from Barnabus Bull dated May 1st 1803 in William Lester, *op.cit.*, 1811, p.126.

29 Sir J. Sinclair, *op.cit.*, 1812, p.74. Similar opinions were expressed in a letter from R.r.r., F.M., 5, 1804, p.19 and by William Tennant in F.M., 11, 1810, p.177.

30 Sir John Sinclair, *General Report on the Agriculture of Scotland*, 1, 1814, pp.254-255.

31 A six-horse is recommended as a minimum size in 'Essay on Barn Management', *Quarterly Journal of Agriculture*, 3, 1831-32, p.998.

32 One water-powered machine erected at Meldon Park South Farm before 1815 cost £1180. 1815 Greenwich Hospital Report, NCRO/NRO/467/42/3.

33 Letter from T-t, F.M., 6, 1805, p.443.

There were other serious disadvantages associated with the threshing machine. Opinion was divided on whether the dust created by mechanical threshing was any less healthy than that stirred up by the flail,³⁴ and the prodigious number of gorey and fatal accidents they occasioned could hardly have endeared them to the average labourer.

"These abominable gin-horse thrashing machines... [were] purposely constructed to rid the world of 'surplus population'; for to be caught inside of the brick pillars that supported the roof, when the horses were passing, was certain death, without any coroner's jury ever having the courage to return a verdict of manslaughter against the owner..."³⁵

Neither was the threshing machine generally regarded as being kinder to animals. "The value of a horse-power machine is problematical; an invention, added to others, for killing horses."³⁶ But the labourers' main complaint and the threshing machine's most serious disadvantage was that it took work from their hands and therefore bread from their mouths. In most areas this increased the burden on the poor rates and meant that the farmers, who often paid a large proportion of such rates, still had to pay the flail men displaced by the machine. "On farms of size, in a district where flail men are few, they [threshing machines] become a positive and great good. On the contrary, in a country which is fully supplied with farm workmen, they are parochial evils."³⁷

In areas where straw was valuable for thatching or for manufacture, the

34 "We have great difficulty in getting a Man to manage our Threshing, since we lost Peter Fogo, the Dust is so bad for them at Times, especially the old Wheat, when it is threshed." Letter of Matt. Culley to John Welch, September, 1803. NCRO/ZCU/6.

35 Opinion of Mr. Tweddell, a farm labourer in Cleveland, quoted in A. and J.K. Harrison, 'The Horse Wheel in North Yorkshire', Bulletin of the Cleveland and Teesside Local History Society, 8, March 1970, p.14.

36 Walter Davies, Agriculture of South Wales, 1815, p.440.

37 William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 4, Midland Department, 1815, p.637.

bruising it received in the threshing machine was not welcomed,³⁸ though Arthur Young saw this as an advantage where the straw was to be fed to cattle.³⁹ Another obstacle to the introduction of the threshing machine which may have been significant was the difficulty of threshing corn in the confused state in which scything left it. Where the sickle had been used, the bundles could be easily and neatly presented to the machine.⁴⁰

Basically, it would seem that the early threshing machine was a distinct advantage in areas where labour was scarce and therefore expensive, where it had to be supplemented rather than replaced. It was also necessary that there be farmers or landlords wealthy enough to afford the larger, more powerful machines, and farming units large enough to produce sufficient corn to keep such a machine occupied. Nor can it be imagined that a tenant would undertake such expenditure without adequate security for his investment. "Meikle's threshing machine... is a powerful but costly erection. On large corn farms, however, it will answer to erect such machines; and there are frequent instances in Berwickshire and Northumberland, of farmers incurring that expense on the security of twenty-one years' leases."⁴¹ It is suggested that these conditions were prerequisites for the successful diffusion of the early threshing machine and that this diffusion was not successful where they were absent.⁴²

Such conditions did exist in Northumberland. Average farm size was high, leases general and frequently long, particularly in the north of the County. (see pp. 163-4), and wages for farm labourers were among the most generous in the country (see p. 185). Yet, earnings at

38 "In situations near great market towns, where straw is an object, I find that it breaks too much, where it is intended for sale." John Tuke, *op.cit.*, 1800, p.83.

39 A.A., 20, 1793, p.250.

40 James Donaldson, *Modern Agriculture*, 1795, 2, p.96.

41 J.C. Loudon, *Encyclopaedia of Agriculture*, 1869, p.436.

42 Stuart Macdonald, 'The Progress of the Early Threshing Machine', *Ag.H.R.*, (forthcoming).

the ports and mines of the south-east were greater still and some difficulty was experienced competing with them. "I am situated in the centre, betwixt two navigable rivers, and it is with great difficulty I can get a man to turn his hand to husbandry, as they can make so much greater wages, in a few hours, at either of the ports [Sunderland or Newcastle] , by casting of coals into the ships and the ballast out."⁴³ But the Northumberland farm labourer never regarded the threshing machine as a competitor. There was not the remotest likelihood of it throwing him out of work and there were no echoes in Northumberland of the Captain Swing Riots experienced in the South in 1830 and 1831,⁴⁴ or of the precursors of these troubles in the immediate post-War years.⁴⁵ William Cobbett explained the absence of Swing Riots in the North East by the fact that "Agriculture is only a small part of the business of the county [Durham] , and that in the southern, eastern and western counties it is the whole business".⁴⁶ The only objection Northumberland labourers seem to have had to the threshing machine was the high fatality rate it caused among them. This seems to have been the case wherever threshing machines were introduced.⁴⁷ Where they were common, newspaper reports⁴⁸ and private correspondence⁴⁹ make it clear that considerable

43 Letter from Stephen Watson of Oleadon, near Sunderland, Jan.22nd 1791. A.A., 15, 1791, pp.491-2.

44 See Hobsbawm and Rude, op.cit., 1969, passim.

45 Incredulous reports of the destruction of threshing machines in Surrey occur in the Newcastle Courant, May 11th 1816 and Jan 20th 1817.

46 William Cobbett, Rural Rides, 1832, G.D.H. and M.Cole ed.,1930,p.714.

47 See letter from S.Taylor of Norfolk in F.M., 18, 1817, p.286.

48 There were,for example, nine reports in the Newcastle Courant between 1804 and 1813 of fatalities caused by local threshing machines. N.C., June 23rd and Dec. 29th 1804; Oct.31st 1807; Jan.23rd, Sept.24th and Dec.17th 1808; Aug.19th 1809; March 24th 1810; April 20th 1811 and Nov.27th 1813.

49 A letter from George Culley to John Welch of Nov.23rd 1799 warned that "all the machinery, so soon, as you can should be covered for fear of Misfortunes, & the People should have no Caps to their Cloaths As many Misfortunes happen from Womin's long loose Cloaths or Mens Coat Laps". NCRO/ZCU/6. See also letters dated Feb.22nd 1800 in NCRO/ZCU/6 and Dec.8th 1809 in NCRO/ZCO/9/1.

slaughter resulted.

The general Northumberland custom of harvesting corn before it was quite ripe⁵⁰ and sometimes while it was still damp⁵¹ also made the threshing machine more suitable than the flail. The use of the sickle in Northumberland to harvest rather than the scythe used generally in southern England meant that corn was presented more neatly to the machine.⁵² Although sickle harvesting was very much slower,⁵³ its close inter-relationship with the threshing machine may well have eased the dissemination of that machine and prolonged the use of the sickle. "The sickle is almost the only instrument used in reaping. Several mowing instruments have been introduced, but soon given up; and now that thrashing mills are coming much into use, it is probable the use of the sickle will be still more confirmed, as corn thus reaped is in best order for thrashing in the mill."⁵⁴

Pre-Meikle interest in the threshing machine in Northumberland suggests that conditions conducive to its diffusion in the County were already in existence by 1786. When the first Meikle machine was brought into or built in the County is not known, but John Bailey had certainly perfected the circular rake addition at Chillingham by 1789 and machines built subsequently all carried this attachment.⁵⁵ The earliest edition of the County Agricultural Report, that of 1794, stated that "Thrashing machines are now becoming general in the northern parts of the county."⁵⁶

50 John Grey, 'On Farm Buildings', J.R.A.S.E., 4, 1843, p.3.

51 R.W. Dickson, op.cit., 1810. p.30.

52 Ibid., pp.28-30.

53 One series of figures pronounced that 2.3 acres of wheat and 4.0 of barley or oats could be cut by one man using a scythe in a ten-hour day, but only 1.0 acres of wheat and 2.0 of barley or oats if a sickle were used. George Ewart Evans, Ask the Fellows who Cut the Hay, 1961, p.118.

54 John Naismith, Agriculture of Clydesdale, 1806, p.98.

55 Bailey and Culley, 1805, pp.52 and 61.

56 Bailey and Culley, 1794, p.47.

There was certainly a water-powered one at Warenton in 1791 whose owner claimed that "threshing machines are not yet become general".⁵⁷ One small machine powered by a single horse and costing £50, was erected at Roddam by 1791,⁵⁸ and another, costing £40, at Middleton by 1788.⁵⁹ Raistrick had apparently built a £45 machine in Morpeth in 1789 and had sold it to a gentleman in Scotland⁶⁰ and by 1792 had acquired a considerable reputation in the building of threshing machines.⁶¹ Later editions of the County Report stated that "Thrashing-Machines are now become general in the northern parts of the county".⁶² Clearly the term 'general' is open to a wide range of interpretation. The first newspaper mention of a Meikle threshing machine occurred in 1793 and is an advertisement by Raistrick offering for sale the horse wheel to drive such a machine.⁶³

Table 20:1 shows the number of threshing machines mentioned in the Newcastle Courant before 1850 in five-year groups. Figure 20:1 reveals an approximation to the cumulative adoption curve⁶⁴ with time traced against the absolute number of discovered threshing machines rather than against the percentage of adopters - a figure impossible to obtain. It is presumed that the frequency with which threshing machines were mentioned in newspapers bears some relation - perhaps a reasonably close relation - to the percentage of adopters at any time. If this is so, it justifies the presentation of Figure 20:1 and suggests that interest in the threshing machine had been extremely sudden after an initial period of wariness and also that the diffusion probably continued

57 Letter from John Pratt of Warenton to A.A., 15, 1791, pp.486-7.

58 Letter of V. A. Roddam to A.A., 15, 1791, pp.492-3.

59 Letter of James Donaldson to A.A., 10, 1788, p.438.

60 Letter of Thomas Dundas of Stirlingshire, A.A., 15, 1791, pp.481-4.

61 Arthur Young, A.A., 17, 1792, pp.170-1.

62 Bailey and Culley, 1805, p.49.

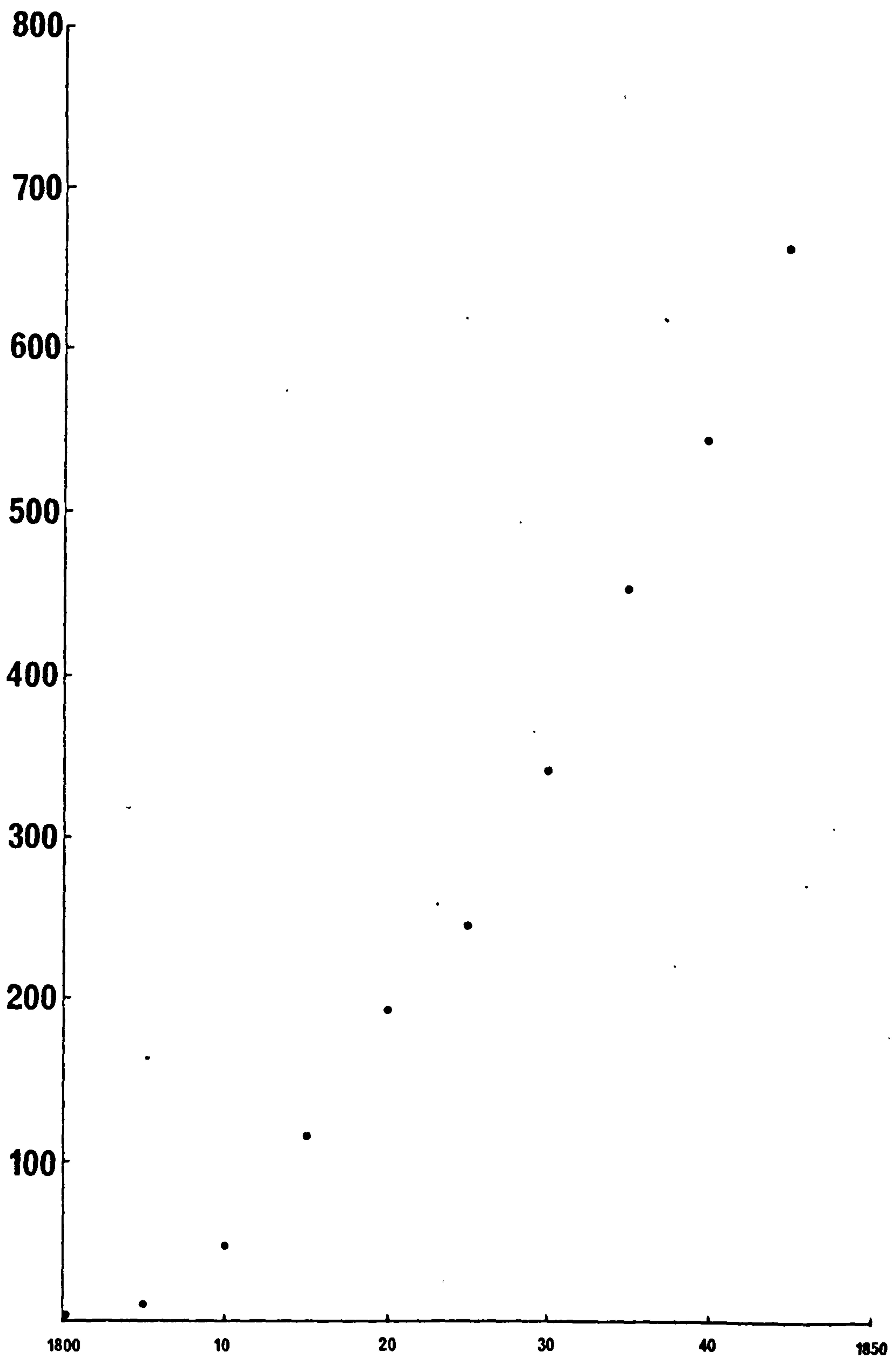
63 N.C., Nov.30th 1793.

64 See, for example, E.M. Rogers and F.F. Shoemaker, *Communication of Innovations*, 1971, pp.176-7.

Figure 20:1

'Cumulative Adoption Curve' of Threshing
Machines in Northumberland up to 1850

Cumulative Total
of
Threshing Machines



Source: Newcastle Courant, 1796-1850

unabated after 1850. There is no indication that the top of the 'S' curve has been reached.

Table 20:1

Threshing Machines Mentioned in Newcastle Courant before 1850.

1796 - 1800	3
1801 - 1805	9
1806 - 1810	36
1811 - 1815	67
1816 - 1820	76
1821 - 1825	55
1826 - 1830	96
1831 - 1835	110
1836 - 1840	91
1841 - 1845	118
1846 - 1850	162

Source: Newcastle Courant, 1796 - 1850.

Table 20:2 shows the context in which threshing machines were mentioned in newspapers. As most of these are indicative of the disposal rather than the adoption of a machine, it must be supposed that Figure 20:1 conceals a considerable time lag. As it is known that the first machines were being introduced in the late 1780s, and as Figure 20:1 shows this process to be occurring in the period 1796-1805, it is not unreasonable to assume a time lag of ten or fifteen years.

Table 20:2

Context in which Threshing Machines Were Mentioned

Total No. of Refs. up to 1850	Sale of Farm Stock	Available for use by Purchaser of way- going crop	Sale of Threshing Machine	Farm to Let	Farm for Sale	Featured in Accidents
828	237	221	188	123	34	25
Percentage of Total References	28.6	26.7	22.7	14.9	4.1	3.0

Source: Newcastle Courant to 1850.

Many of the newspaper advertisements state the sort of power used for each machine. The figures are given in Table 20:3. What is of immediate interest is that 12 of the 15 machines whose power supply is given before 1810 were powered by water. The power of another 33 remains unknown, but there seems justification enough to suppose that the threshing machine was originally introduced to Northumberland on a major rather than a minor scale. The cost of the water-powered machine at Meldon Park South Farm has already been mentioned, and it is not hard to find other examples of such machines costing about £500.⁶⁵ At Middleton Hall Farm, Ilderton, the water threshing machine required the construction of three reservoirs⁶⁶ and the piping of the water supply for over half a mile.⁶⁷ Clearly these were substantial undertakings, totally different from the one- or two-horse powered machines eschewed in some parts of the country. There was a massive increase in the proportion of horse-powered machines in the early 19th century and horses were obviously the main motive force up to mid-century, though water power remained important and steam power came to have some significance. What is most interesting is how few machines were powered by two or three horses. There was hardly a threshing machine in the County which required fewer than four horses and very many needed six and some eight horses to drive them. As horses were expected to work only a half-day on the machine, this implies a farm holding large enough to support at least eight horses - something in excess of 200 acres as a very minimum.⁶⁸ In fact, some idea of the size of farms which had threshing machines can be gained from the newspaper advertisements themselves. Some of the advertisements, particularly those offering

65 The water-powered machine at Thornbrough Town Farm apparently cost £484. 1815 Greenwich Hospital Report, NCRO/NRO/467/42/3.

66 NCRO/ZSI/94.

67 NCRO/ZSI/17.

68 Arthur Young calculated that 4 horses were needed for each hundred acres arable in the area between Morpeth and Alnwick, Northern Tour, 1770, 3, p.34.

Table 20:3Power Sources of Threshing Machines up to 1850

		1796 to 1810	1811 to 1820	1821 to 1830	1831 to 1840	1841 to 1850
Total Number of Threshing Machines		48	143	150	203	284
Power Known		15	66	71	104	124
Power Unknown		33	77	79	99	160
Horse-driven but Power Unknown		3	5	1	3	1
1 or 2 Horse		0	0	1	0	2
3 Horse		0	1	1	0	0
4 Horse		0	29	19	23	32
5 Horse		0	1	0	11	12
6 or more Horse		0	12	19	31	39
TOTAL	No.	3	48	41	68	86
Horse- Driven	%	20	73	58	65	69
Wind Power	No.	0	2	1	0	0
	%	0	3	1	0	0
Water Power	No.	12	16	24	28	28
	%	80	24	34	27	23
Steam Power	No.	0	0	5	8	10
	%	0	0	7	8	8

% of Power Known.

Source: Newcastle Courant, 1796-1850.

farms to let which were equipped with threshing machines, give the acreage of holdings. Although numbers for some power categories are pathetically few, the pattern suggested by Table 20:4 is of the largest holdings employing steam or water power, slightly smaller farms using mills driven by six or more horses, and very much smaller ones using four-horse power. It would seem from this that many machines for which the power is unknown, were, in fact, four-horse machines and that threshers of this size were the most common in the County. If machines of this scale were the norm, then many advertisers might well have felt it unnecessary to give details of a size that would automatically be assumed. The diameter of existing wheelhouses in Northumberland is commonly 24 or 26 feet,⁶⁹ ample room for four or six horses, but unnecessarily large for fewer.

Table 20:4

Relationship Between Threshing Machine Power Source and Farm Size

<u>Threshing Machine Power Source</u>	<u>Number of References</u>	<u>Average Farm Size in acres</u>
Power Source Unknown	82	228
4 Horse	6	244
6 Horse	3	450
Steam	7	570
Water	73	603

Source: Newcastle Courant, 1796-1850.

If, then water-powered machines were the first to be introduced to the County, and were characteristic of large farms, it could be expected that the average size of farms with threshing machines would have declined as threshing machines in general and horse threshing machines in particular became more common. In fact, the large number of acreage figures for huge farms with water-driven machines tends to distort averages for short lengths of time, but it would seem that the 101 farms with threshing machines for which acreages were given during the period

⁶⁹ J.A.Hellen, 'Agricultural Innovation and Detectable Landscape Margins: The Case of Wheelhouses in Northumberland', Ag.H.R., 20, 1972, pt.2, p.142.

1796-1830, had an average size of 443 acres. This compares with 71 farms for which figures were given during the period 1831-1850 having an average farm size of 385 acres, but these figures are still obviously distorted by acreages associated with water-powered machines. There is no real proof that the threshing machine gradually became attractive to smaller and smaller farms. Indeed, what would appear to have been regarded as minimum horse-power requirements, would seem to have precluded the smaller farm from ever contemplating ownership of a threshing machine. Of the 21 farms comprising the Chatton Bailiwick of the Duke of Northumberland in 1852, 4 had no tillage and therefore no threshing, 8 had water-powered machines, 4 had horse-powered and 5 were described as being of such small extent that the flail was still used.⁷⁰

It is difficult to gauge how rapidly threshing machines came into use. Bailey and Culley had, as noted, described them as 'general' in the northern parts of the County by 1797.⁷¹ Cobbett claimed in 1832 that "All the farm buildings are of stone; each has a place sufficiently large for beating out the corn by a thrashing machine; and there appears to be no such thing as a barn's floor or a flail in the whole of these counties [Durham and Newcastle] ",⁷² an assertion obviously too sweeping in view of the Chatton report. John Grey wrote in 1841 that they were universal in the County,⁷³ and Thomas Colbeck in 1847 that "There are now few farms without a thrashing machine".⁷⁴ While Cobbett may well be the most entertaining of early 19th century writers to concern themselves, at least in part, with agriculture, it would be folly to place too much reliance on any of his comments. The remaining three sources have in common the factor that each was seeking to show how

70 'Report as to the Coverings of the Horseways to Thrashing Machines, Chatton Bailiwick, Nov.1852', AC, Middle Room, left-hand window sill.

71 Bailey and Culley, 1797, p.46.

72 William Cobbett, Rural Rides, 1832, G. and M. Cole ed.,1930, p.714.

73 John Grey, p.178.

74 Thomas Colbeck, p.424.

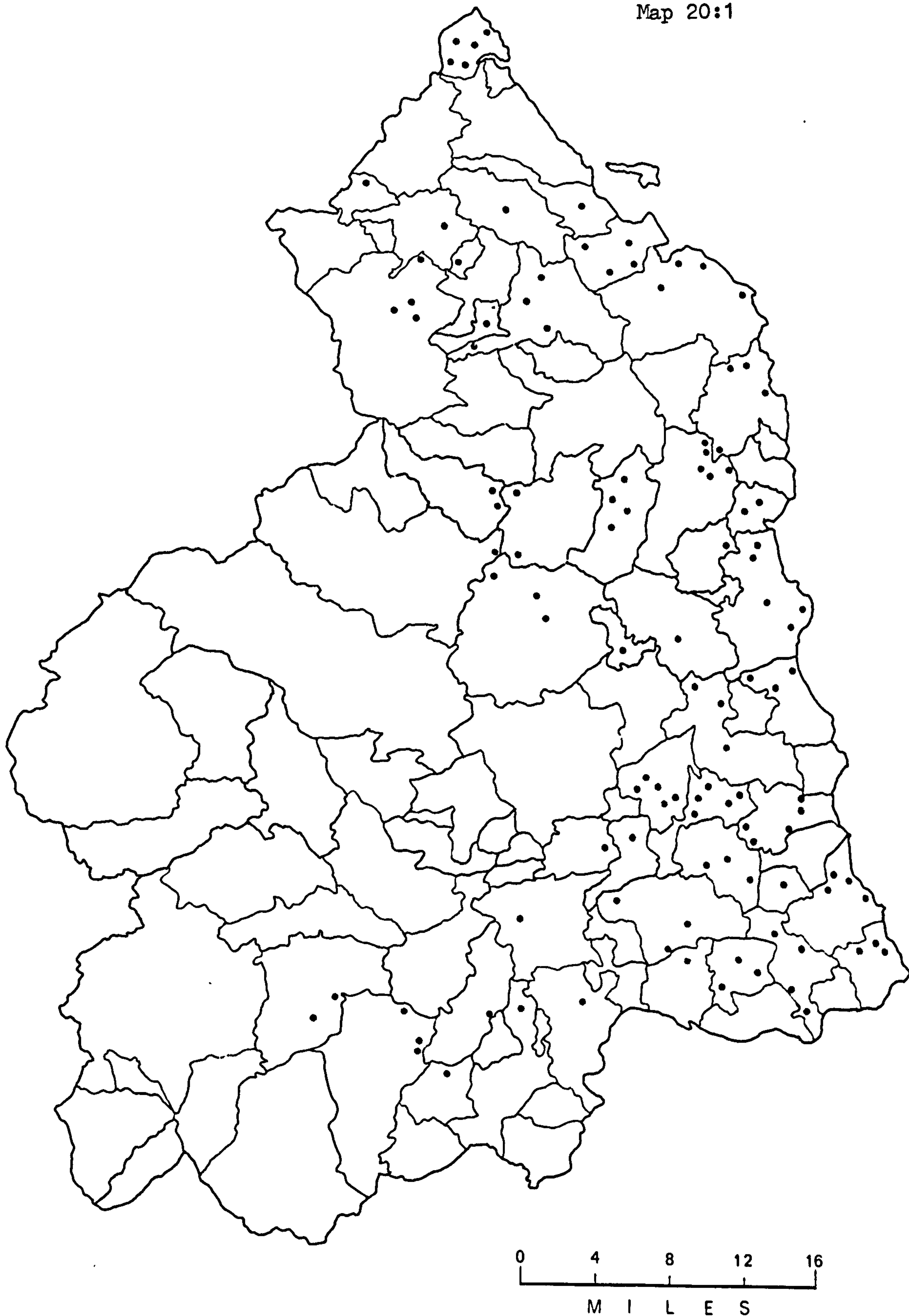
progressive Northumberland agriculture was. The threshing machine, regarded as an epitome of agricultural improvement, may well have been claimed to have been more common than it in fact was.

J.A. Hellen has constructed a distribution map of wheelhouses,⁷⁵ found either by fieldwork or on the 2nd edition 25 inch O.S. sheets (1896-8), on which are marked the locations of some 575 wheelhouses in existence at the end of the 19th century.⁷⁶ Hellen found a considerable number of wheelhouses situated above the 500 foot contour in areas marginal to arable agriculture. He also found remarkably little evidence of wheelhouses in the northern third of the County. The threshing machines discovered in newspaper advertisements can also be mapped and this has been done for the periods 1796-1815, 1816-1830 and 1831-1850. Map 20:1 (1796-1815) shows a fairly even scattering of threshing machines over the arable lands of the County. There is certainly no obvious 'centre' of innovation. Map 20:2 (1816-30) shows much greater concentrations of threshing machines in south and mid-Northumberland, but not in the north of the County. The higher land in the west and that area most characterised by small farms, the south-west, remain unoccupied. The third map in the series, 20:3, shows a massive consolidation in those areas originally occupied by threshing machines on Map 20:1. There is still little incursion into highland areas or the south-west and, with the exception of Bamburghshire, where an increase in the number of machines seems evident, the north still has comparatively few machines.

75 The wheelhouse was the covering over the horse mill and was generally attached to the north or eastern side of the barn containing the threshing machine. It seems likely that the earliest horse-driven machines did not always have such refinements and that they only 'became general about mid-century. "... the old uncovered horse paths, and rude mills, have given place to those of a better description; and the circular or octagonal horse walk, with its thatched, tiled, or slated roof, now gives a peculiar feature to the Scottish or border farm." Robert Ritchie, *The Farm Engineer*, 1849, p.69.

76 J.A. Hellen, *op.cit.*, p.145.

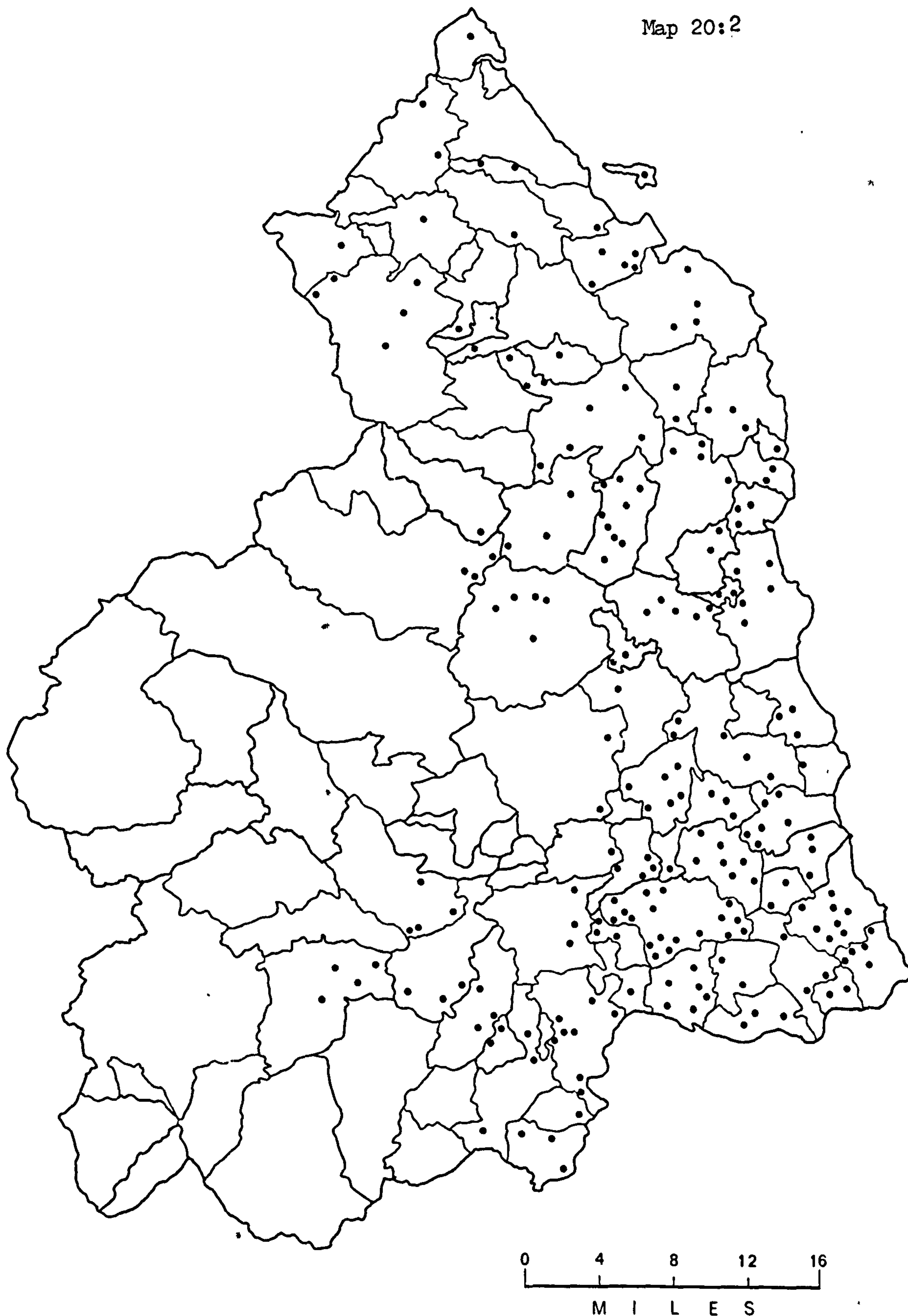
Map 20:1



Distribution of Threshing Machines, 1796-1815.

Source: Newcastle Courant, 1796-1815.

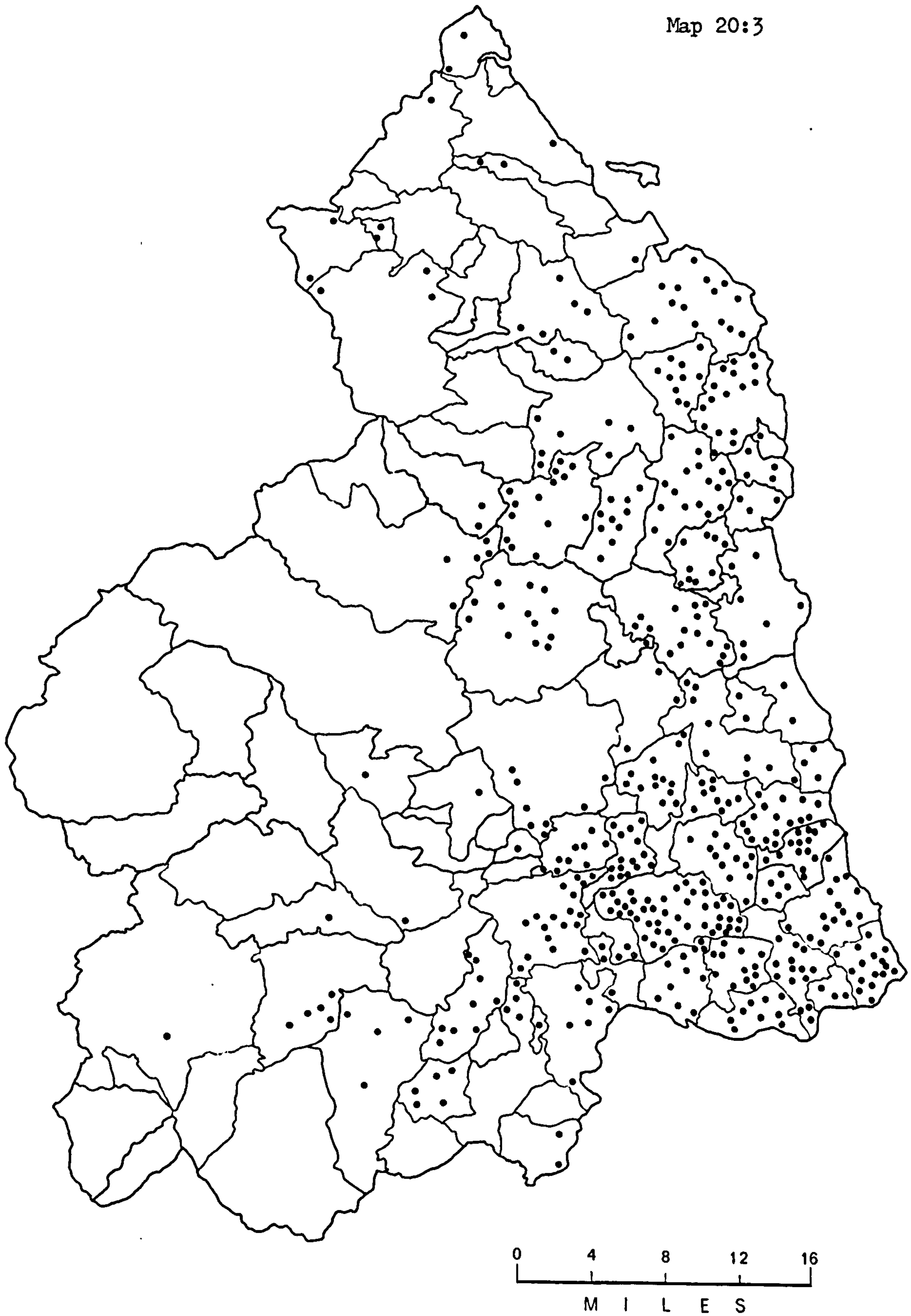
Map 20:2



Distribution of Threshing Machines, 1816-1830.

Source: Newcastle Courant, 1816-30.

Map 20:3



Distribution of Threshing Machines, 1831-1850.

Source: Newcastle Courant, 1831-50.

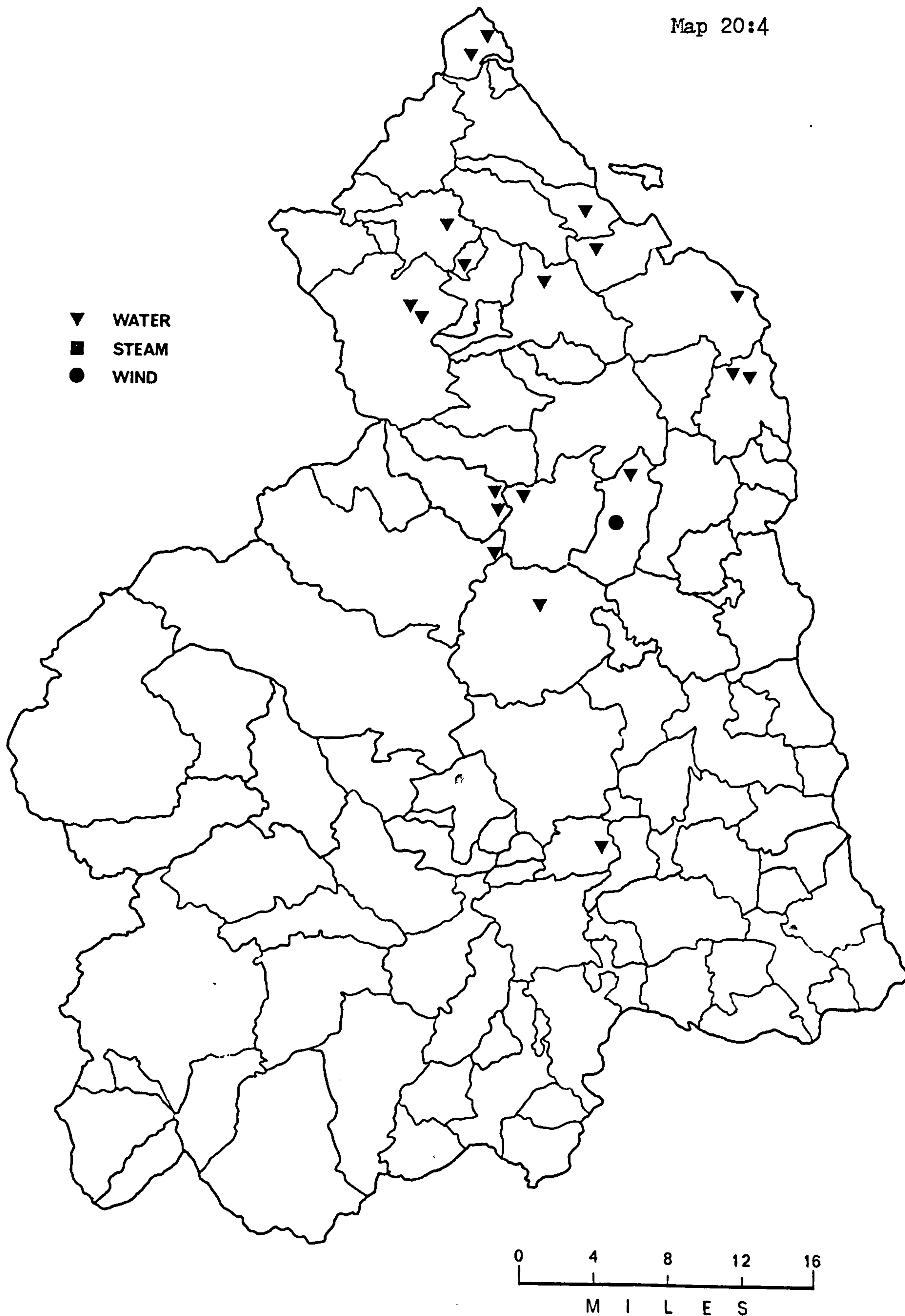
Maps 20:4, 20:5, and 20:6 shed more light on the situation. These show those machines known to have been powered by wind, water or steam during the same three periods. The series suggests that the generally large and expensive water-powered machines were originally typical only in the north and that, though they spread to other areas, particularly the Tyne Valley, only in the north was water always more important than any other motive force. Steam-powered machines made their appearance during the second period and were originally restricted to the northern coastal area. Map 20:6 shows most of these still in this area, but several examples are found in the south-east and in Glendale. Wind machines were never important in Northumberland. Map 20:6 would seem to suggest that experiments with this form of power had failed and that other forms were unanimously agreed to have been more appropriate.

The third series, Maps 20:7, 20:8 and 20:9, shows the distribution and power of horse-driven threshing machines during these periods. Again, the dominance of mills worked by between four and six horses is apparent. There seems to have been no difference in the distribution pattern of four- and six-horse machines at any time, and with the exception of the north, the frequency of machines of this power seems to be roughly proportional to the frequency of threshing machines in general. The almost total absence of horse-powered machines in the north-west and far north is the most striking feature of this series.

While the general pattern of the first series conforms to that of Hellen's map, Map 20:3 shows no evidence of nearly 30% of wheelhouses above the 500 foot contour that Hellen found.⁷⁷ In particular, the groupings that he found on the upper Coquet, and on the North and South Tyne are missing. Consequently it may be assumed that the adoption of threshing machines had not reached saturation point by 1850 (or 1840, assuming a ten-year time lag for this evidence) and that threshing machines

⁷⁷ Ibid, p.152.

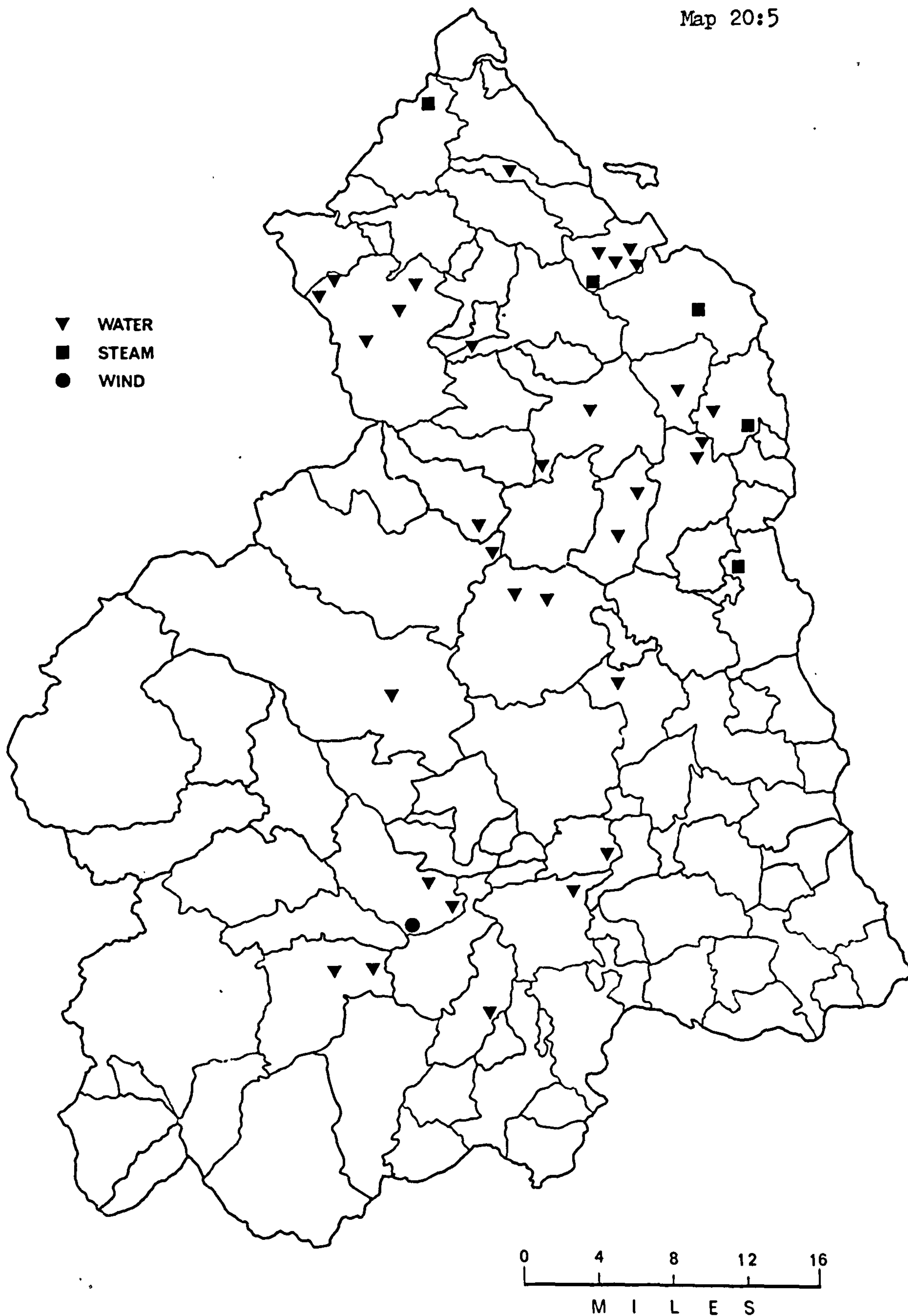
Map 20:4



Motive Power of Threshing Machines not Driven by Horses,
1796-1815.

Source: Newcastle Courant, 1796-1815.

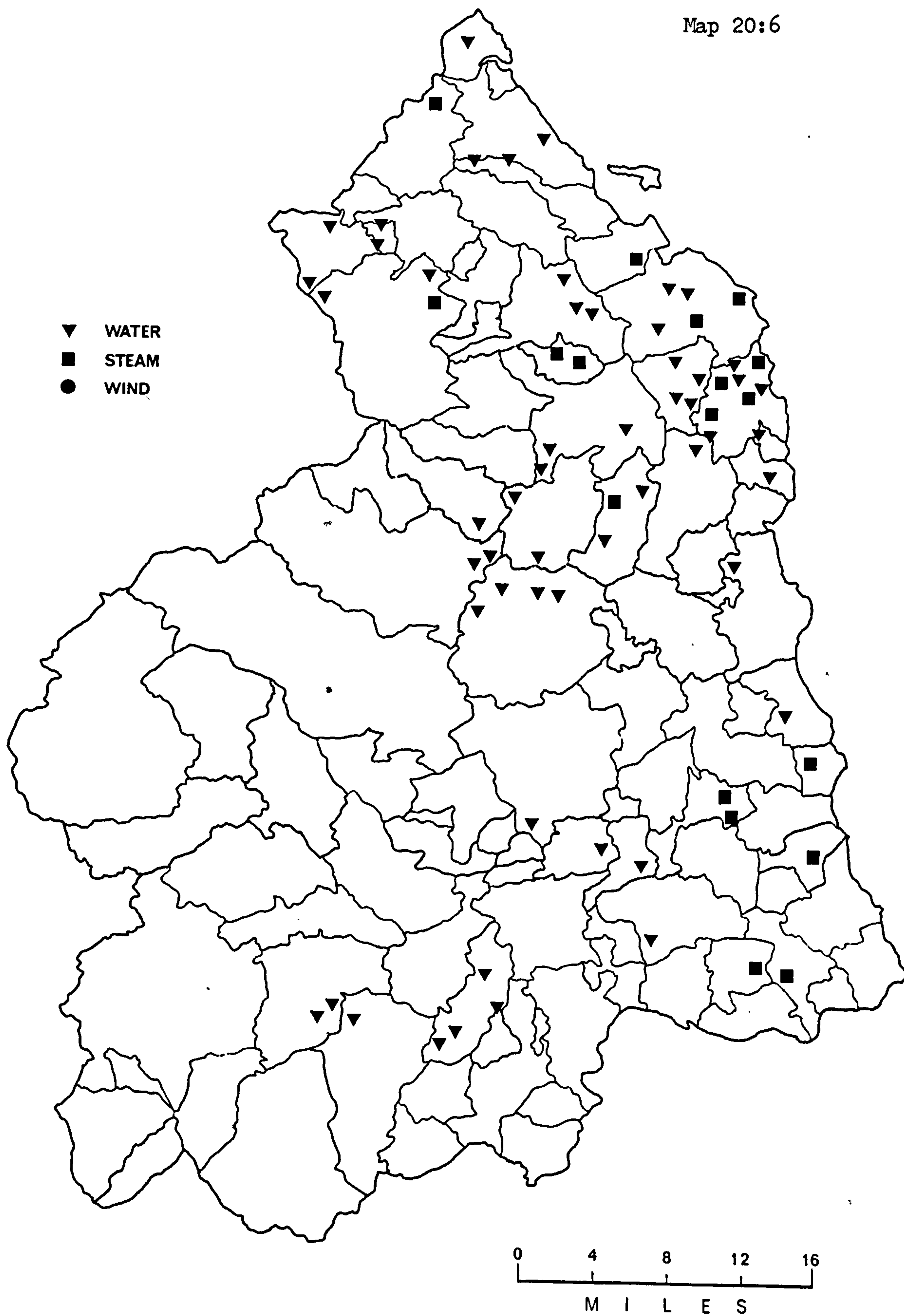
Map 20:5



Motive Power of Threshing Machines not Driven by Horses,
1816-1830.

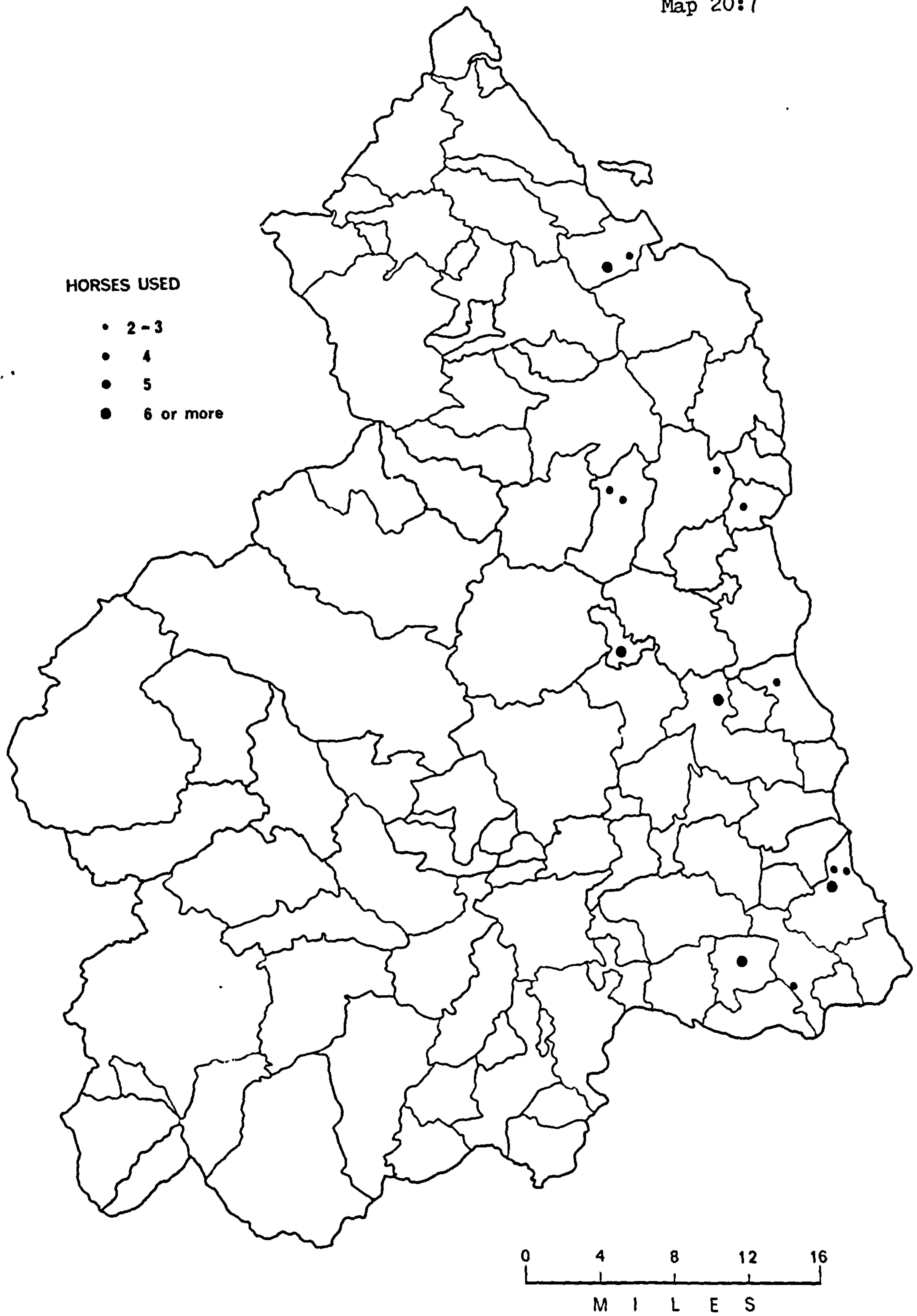
Source: Newcastle Courant, 1816-30.

Map 20:6



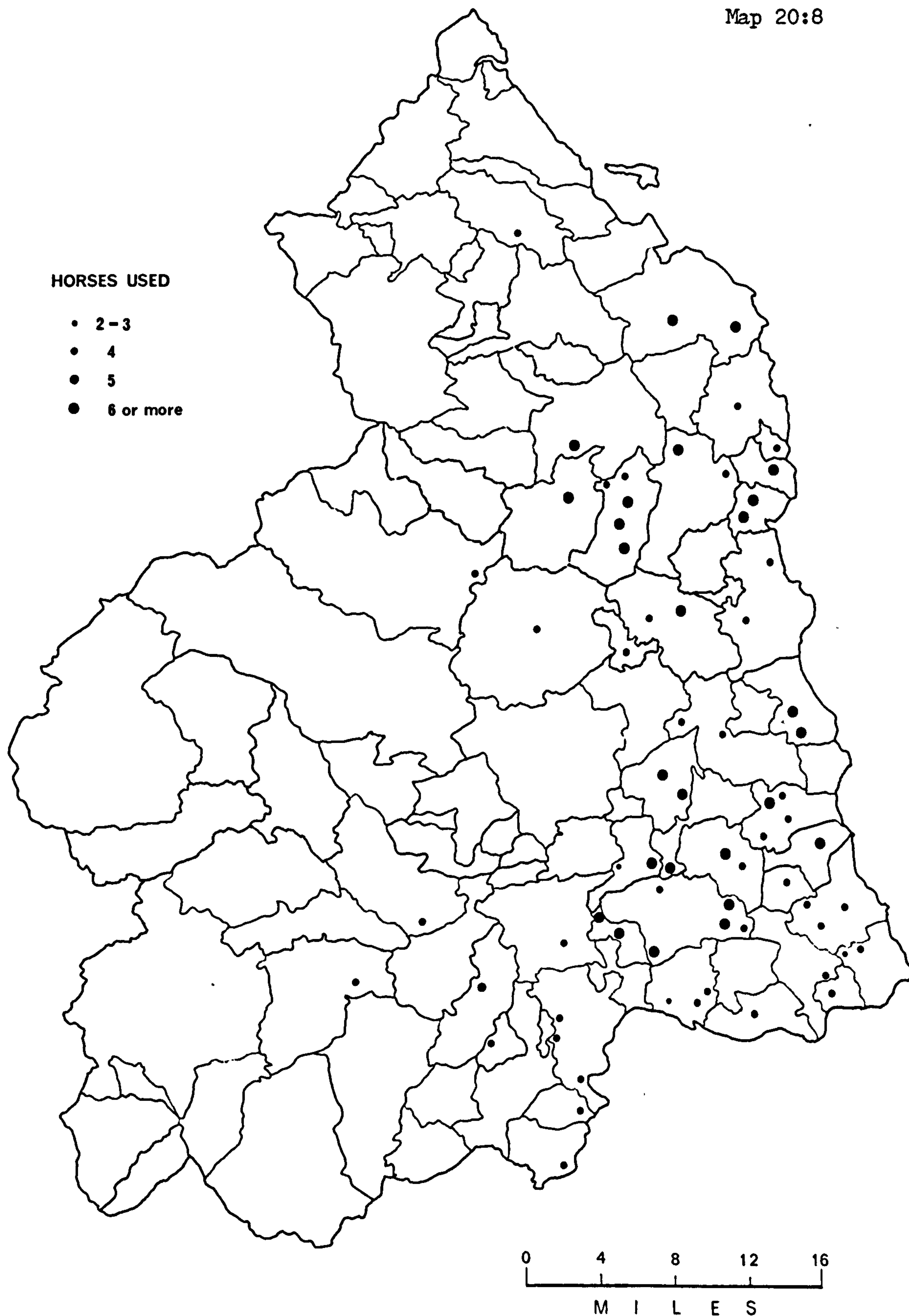
Motive Power of Threshing Machines not Driven by Horses,
1831-1850.

Source: Newcastle Courant, 1831-50.



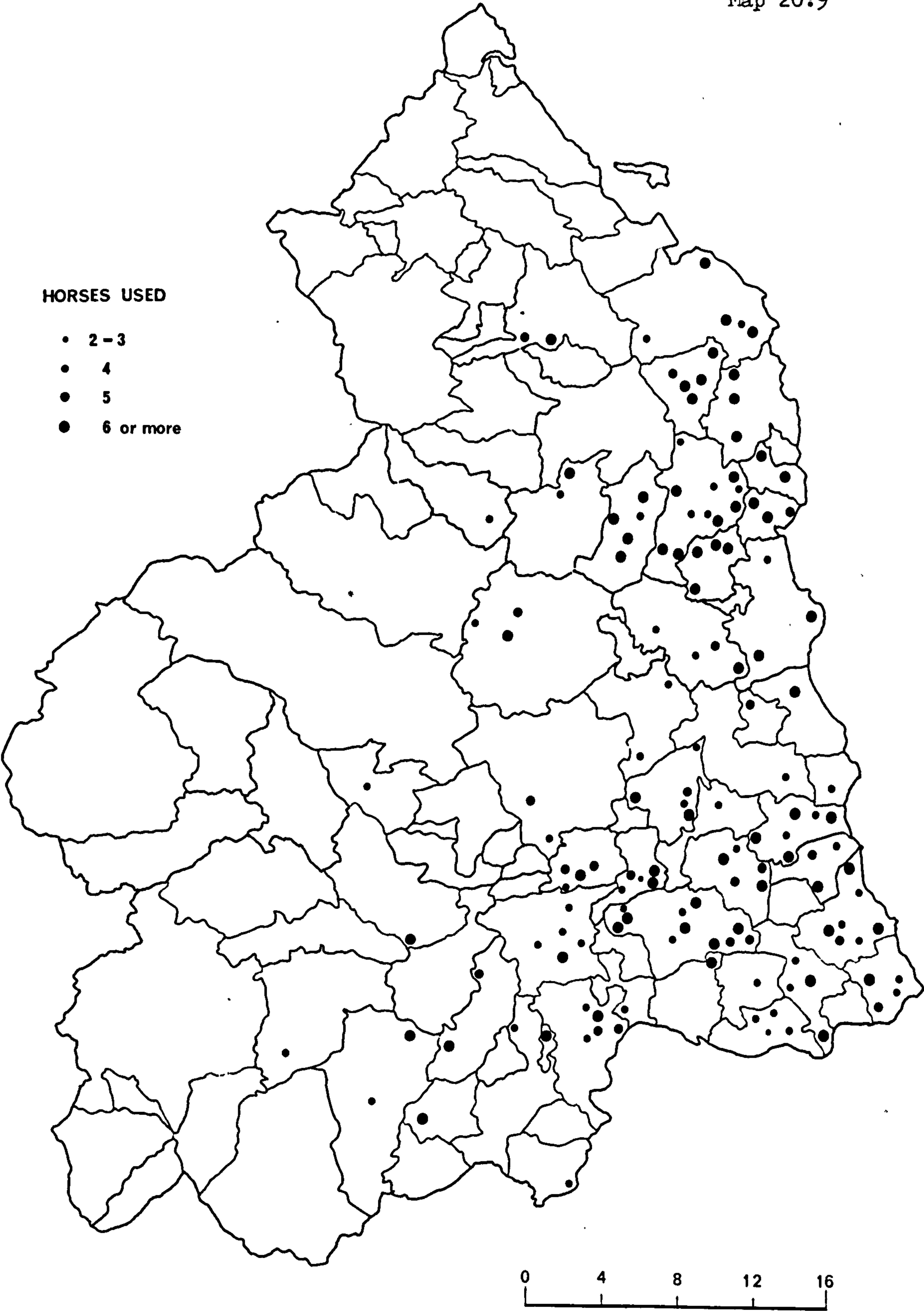
Power of Horse-Driven Threshing Machines, 1796-1815.

Source: Newcastle Courant, 1796-1815.



Power of Horse-Driven Threshing Machines, 1816-1830.

Source: Newcastle Courant, 1816-30.



Power of Horse-Driven Threshing Machines, 1831-1850.

Source: Newcastle Courant, 1831-50.

with horses as their motive power had still to spread, not necessarily to areas of marginal arable land for there is no evidence of significant land use change in upland areas in Northumberland during the first half of the 19th century. (see pp.231-2), but to areas where the use of the threshing machine was of marginal economy. Limited arable acreage or farm size would be sufficient to explain this delay. The acreage in Northumberland under permanent or even semi-permanent arable above 500 feet must always have been trifling. There is evidence that from a peak about mid-century, arable acreage had declined by the time of the first Agricultural Censuses and dropped even further and faster after these; but changes in rotations, especially the change from temporary to permanent pasture, were largely responsible. Evidently these highland wheelhouses were not built before 1840 and it may be wondered how anxious anyone anywhere in the country was to make any new investment in arable farming after about 1870. Hence a mid-century date for these machines would seem likely were it not for the suspicion that, in the second half of the 19th century, when many farmers preferred to employ portable threshing machines rather than shorten the lives of their horses in wheelhouses,⁷⁸ itinerant threshing machines would have been less likely to travel areas where the terrain was difficult, the farms dispersed and the arable acreage small. It would seem, in the absence of contrary evidence, that these highland threshing machines may well have been the last to have been built in the County⁷⁹ and among the last

78 Richard Henderson, *The Modern Homestead*, 1902, p.227.

79 Some horse-driven machines certainly worked into the present century before being converted to deisel or electric or rendered redundant by portable machines. "In 1967 it was still possible to meet a Northumberland farmer who, as a young man, had trained horses for driving a threshing mill in the circular 'gin-gans' which are such a feature of that county." Nigel Harvey, *A History of Farm Buildings in England and Wales*, 1970, p.153.

to remain functional.⁸⁰

The comparative shortage of wheelhouses in the north of the County is, as Hellen explains,⁸¹ attributable to the large farm size in that region, but this is only a partial explanation. More important is the factor evident on Maps 20:4, 20:5 and 20:6, that most threshing machines in this area were water-powered and required no wheelhouse.⁸²

The Northumberland threshing machine was, almost without exception, static until the second half of the 19th century. Elsewhere, there was often considerable doubt as to whether such static machines were fixtures and therefore the property and responsibility of the landlord. In Essex in 1848, one main reason tenants had not introduced fixed threshing machines was said to be because they could then be claimed by the landlord as fixtures, without compensation to the tenant.⁸³ In Lincolnshire, such machines would apparently have had to have been physically split between landlord and tenant.⁸⁴ Northumberland evidence suggests that local tradition had declared that, no matter how fixed, a threshing machine was not a fixture and would remain the property of the tenant if he had supplied it.⁸⁵ It would seem that even buildings associated with the threshing machine remained the tenant's property and advertisements appeared, presumably where outgoing tenant and landlord or incoming tenant had failed to come to terms, offering not only the threshing machine, but also the "Horse Shade",⁸⁶ "the Timber etc. which covers the Horse Wheel",⁸⁷

80 The attraction of the horse-driven threshing machine may well have become greater after the invention of the peg drum machine in 1842 which required about two-thirds the usual power and was much kinder to the horses. N.C., June 21st 1844. "This machine may be said to be the only material change proposed on Meikle's machine, since the period of his invention." Robert Ritchie, *op.cit.*, 1849, p.28.

81 J.A. Hellen, *op.cit.*, p.148.

82 H. Beavis constructed a map of farms using water power from first edition (1865-6) six inch O.S. maps in December 1965. Hancock Museum, Newcastle.

83 Evidence of William Hutley, Report of Select Committee on Agricultural Customs, 1848, p.122.

84 Evidence of William Hesseltime, *ibid.*, p.23.

85 Evidence of G.H. Ramsay, *ibid.*, p.194.

86 Middle Coldside, N.C., June 21st 1823.

87 Riding Farm. N.C., May 7th 1825.

the "Roof over Horse Way",⁸⁸ the "Gangway Cover attached",⁸⁹ or "Pillars and Horse Shade".⁹⁰ It would obviously have been more convenient to have passed on the machine to the next tenant. In 1821, the threshing machine was referred to as one of the "things usually valued as between an off going & an incoming Tenant".⁹¹ Some advertisements make it clear that this was happening,⁹² but a resolution of Wooller Farmers' Club "That it would be of great benefit to both landlord and tenant, if in all leases and agreements a clause be inserted, making it imperative that the entering tenant shall take the away-going crop and thrashing machine at a fair valuation",⁹³ seems to suggest that this system was not universal or automatic. Indeed, a strange proviso was included in some leases whereby the landlord sold the machine to the new tenant and bought it back at the termination of the lease.⁹⁴ This rather odd arrangement is apparent in some newspaper advertisements,⁹⁵ and seems to have been a pragmatic way of avoiding potential legal difficulties that may have discouraged the adoption of static machines by tenants in more southerly counties.

Sometimes threshing machines were built by the landlord and this is occasionally stated in advertisements.⁹⁶ Tenants are known to have attempted to bargain with potential landlords. "I will write to Mr. Wigham to come to us here, and then we may understand one another respecting the S. Lytham farm, I conceive from his Conversation wth us

88 Cow-gate Farm. N.C., June 18th 1831.

89 Thirston West Moor, Felton. N.C., March 8th 1834.

90 Milbourne High House. N.C., April 27th 1849.

91 Letter of H. Brumell to William Bigge, Oct.17th 1821. NCRO/ZFE/46.

92 "A very excellent Thrashing Machine, belonging to the present Tenant, may be had at Valuation." Chillingham Barns. N.C., Oct.25th 1828.

93 N.C., Nov.17th 1848.

94 Examples of this clause are in leases for Netherwitton Barns Farm dated 1828 (NCRO/ZTR/1/105) and for Whittonstall Farm dated 1852 (NCRO/ZCO/9/4).

95 Examples are North Earl, Doddington (N.C., Jan.29th 1819), and Branton West Side (N.C., Aug.24th 1833).

96 An example is Milbourne South East. N.C., Feb.11th 1832.

that he wants no more than the common necessary Buildings such as we are accustomed to erect, either in point of Granary or any thing else, except the Thrash^g Machine, which now every farmer covets."⁹⁷ The Greenwich Hospital Commissioners were especially keen to build threshing machines. Of the 15 mentioned as having been built on the estate between 1805 and 1815, 12 had been provided by the Hospital - each at 8%.⁹⁸ This represented something of a change of policy; of the 12 machines constructed by 1805, the owners of which are discernible, only 3 had been built by the Hospital.⁹⁹ The Visitation Report of 1817 suggests that the generosity of this landlord was exceptional and that if it was to continue then rather more than 8% should be demanded.¹⁰⁰ It, therefore, seems clear that the role generally played by the Northumberland landlord was the not unimportant one of establishing and accepting a situation of limited tenant right: the actual provision of the threshing machine seems generally to have been the responsibility of the tenant. He was responsible for the diffusion of the threshing machine, not his landlord.

Although the cost of threshing machines and their power sources was generally only recorded when the landlord had been concerned, it is not unreasonable to assume that tenants were paying the same sort of prices and that the four known wind threshing machines in the County each cost about £700,¹⁰¹ that the very many water-powered machines could each have cost about £500,¹⁰² and that the £550 paid for a steam

97 Letter from James Dormer, Commissioner, to the Duke of Northumberland, Jan.31st 1801. AC/Z/Div.1/9b.

98 1815 Greenwich Hospital Report. NCRO/NRO/467/42/3.

99 1805 Greenwich Hospital Report. NCRO/NRO/467/42/2.

100 PRO/ADM/79/59/435-6.

101 £852 was paid for the one at East Farm, Meldon and £650 for one at Outchester (1815 Greenwich Hospital Report.NCRO/NRO/42/3/11).Others were at Lemmington Hill Head (N.C., April 27th 1811) and at Chollerton (N.C., Nov.17th 1821)

102 £537 was the average cost of five water-powered machines built by the Greenwich Hospital between 1805 and 1815. 1815 Greenwich Hospital Report. NCRO/NRO/467/42/3.

threshing machine at Glororum was not untypical.¹⁰³ Such figures put the £100 claimed by Donaldson as "the whole expence of a thrashing-mill, including the building of the shed for covering the great wheel"¹⁰⁴ well in the shade. It has been shown that larger machines greatly increased the cost price; another factor which partly explains the small fortunes demanded for many of these massive machines is perhaps best explained by an advertisement offering for sale a threshing machine "suitable for a large Agricultural or Farm Establishment, for Thrashing and preparing Food for Cattle, at present driven by Water, but which could, with Facility, be adapted to Steam or Horse Power, consisting of an excellent 12-Foot Metal Water Wheel, with Oak Float-boards, Spout, Cistern, and Force Pump, Thrashing Machine, with fifteen Riddles; Chaff Cutter, Corn Bruiser, Turnip Slicer, Potatoe Washer, Pulleys and Hoisting Gear, with other detached Apparatus".¹⁰⁵ In other words the power source for the threshing machine was frequently used to perform a multitude of agricultural tasks, particularly when the superior energy of water or steam was harnessed. These auxiliary uses must have added greatly to the attraction of the threshing machine as well as to its bulk and price.

The first steam-powered threshing machines in the County seem to have been built at Chesterhill and Glororum in 1818.¹⁰⁶ A threshing machine was advertised for sale at Aydon Castle in the same year which "from its Strength, might be easily annexed to Steam Power".¹⁰⁷ The earliest reference to steam powered threshing occurred in 1815 when Mr. Jobson of Chillingham New Town advertised for the building of two machines

103 1815 Greenwich Hospital Report. NCRO/NRO/467/42/3.

104 James Donaldson, *Modern Agriculture*, 1795, 2, p.94.

105 N.C., Dec.1st 1837.

106 Greenwich Hospital 1818 Visitation. NCRO/NRO/467/42/4.

107 N.C., June 6th. 1818.

to be driven by "two good and substantial Steam Engines, on Trevethick's Principal... "¹⁰⁸ Only 23 steam-power threshers appeared in the papers before 1850, which rather suggests that the utilization of steam power in agriculture did not become popular until after this date.¹⁰⁹ Cobbett, in his ride between Alnwick and Belford, showed surprise that "the threshing-machines are turned by STEAM-ENGINES",¹¹⁰ but there seem to have been many more further north in Scotland.¹¹¹

When Messrs. Ransome's portable steam thresher was shown at the Royal Agricultural Society's Show at Liverpool in 1841, a report commented that "The advantages of steam power for working fixed thrashing-mills have long been acknowledged in the northern parts of England and in Scotland; but we believe this is the first attempt to render it portable."¹¹² It was not. A portable steam thresher which moved under its own power had been built in Newcastle in 1829 and was destined to work in North Sunderland.¹¹³ Nothing is known of its fate, and there is no evidence of other portable steam machines in the area until 1857 when it was planned to introduce one for the benefit of farms on the Howard of Naworth Estates in Durham which were not "large enough to warrant an outlay of from £250 to £500 in fixed machinery".¹¹⁴ The small portable horse threshing machines that had become popular in many parts of the rest of England from the early 19th century following the failure of the larger static machine to become generally adopted, played little part in Northumberland agriculture before 1850. Such machines were "simply

108 N.C., May 13th 1815.

109 See 'The Steam Engine in its Application to Agriculture', a paper presented to the Newcastle Farmers' Club by Peter Laws, Oct. 5th 1852. L. & P., Bolbec/N630.6/2.

110 William Cobbett, Rural Rides, 1832, G.D.H. and M. Cole ed., 1930, p. 748

111 Evidence of Robert Hope of Haddington. Report of the Select Committee Appointed to Enquire into Agricultural Distress, 1836, p. 34.

112 J.R.A.S.E., 2, 1841, p. CVII.

113 N.C., Sept. 12th 1829.

114 P. & D., Howard of Naworth, N/121/1(20).

thrashing instruments, having neither circular rakes nor fanners attached".¹¹⁵ It is thought that a machine without such accessories would have held little attraction for the Northumberland farmer. It would certainly have left him with a great deal of work. The only newspaper references to portable machines occurred in 1824 when one was wanted to take to New South Wales,¹¹⁶ in 1837 when implement makers in Newcastle announced "that they manufacture the newly-invented Portable Thrashing Machine", as well as "fixed Thrashing Machines upon the most improved Principles",¹¹⁷ and in 1836 when two letting advertisements concerning small farms of about 100 acres stressed that the threshing machines on each were "under Cover".¹¹⁸ This is a term not used subsequently nor was there other mention of portable machines until very much later in the century when they were often steam-powered. The indication is that adoption of the fixed threshing machine had reached saturation point in areas where it otherwise might have been economic to introduce portable machines. In isolated regions, the static machine was not only probably built later, but also probably continued longer in use. In the rest of the County, the spread of the portable steam thresher was a consequence of decaying static equipment during a period of rapidly declining arable interest towards the end of the 19th century.

The static threshing machine was a totally exceptional agricultural implement and was regarded as such by contemporaries. "As to the swagger about our skill, and machinery especially, what is it worth? We have excellent implements certainly; but excepting the thrashing-mill are they worthy of the name of machinery? Can any of them be compared with the perfection of the application of steam in the manufactories...?"¹¹⁹ The threshing machine was not only ahead of its time, it was also, in its technology, almost out of context in the agriculture of the late 18th and

115 J.A. Ransome, *Implements of Agriculture*, 1843, p.151.

116 N.C., July 17th, 1824.

117 N.C., Oct. 27th 1837.

118 Mansion House, Wallsend and Carterside. N.C., April 2nd and 9th 1836.

119 'A Northumberland Ploughman', N.C., Feb. 17th 1827.

early 19th centuries. That it was so readily adopted in Northumberland and not in most other parts of England speaks volumes for the progressive outlook of Northumberland farmers, but it also confirms the importance of the exceptional agricultural conditions - particularly the large farms, high agricultural wages and the security felt by tenants - that permitted this innovation to take place. It is felt that these factors were overwhelmingly responsible for the diffusion of the threshing machine in Northumberland and that proximity to its place of origin was of little consequence. The comment of a Scottish traveller riding south through the Morpeth area in 1812 that he "Saw a thrashing mill - not common now"¹²⁰ coincides with the earliest Bailey and Culley evidence and it would be tempting to frame an argument for the gradual diffusion southwards of the innovation were it not for the conflicting evidence from the newspapers. It is quite clear that though the County's first threshing machines may well have been in the north, other regions caught up so rapidly that the bulk of the existing evidence shows no delay. Because the innovation was significant enough to have left records adequate to trace diffusion, it was also sufficiently significant to ensure that diffusion was too rapid to be traced with even good historical evidence. Hence the evidence serves mainly to illustrate and to emphasise the importance of economic prerequisites and determinants in the development of agricultural improvement.

120 'A Traveller's Notes on the State of Cultivation of the Country through which he passed', F.M., 13, 1812, p.197.

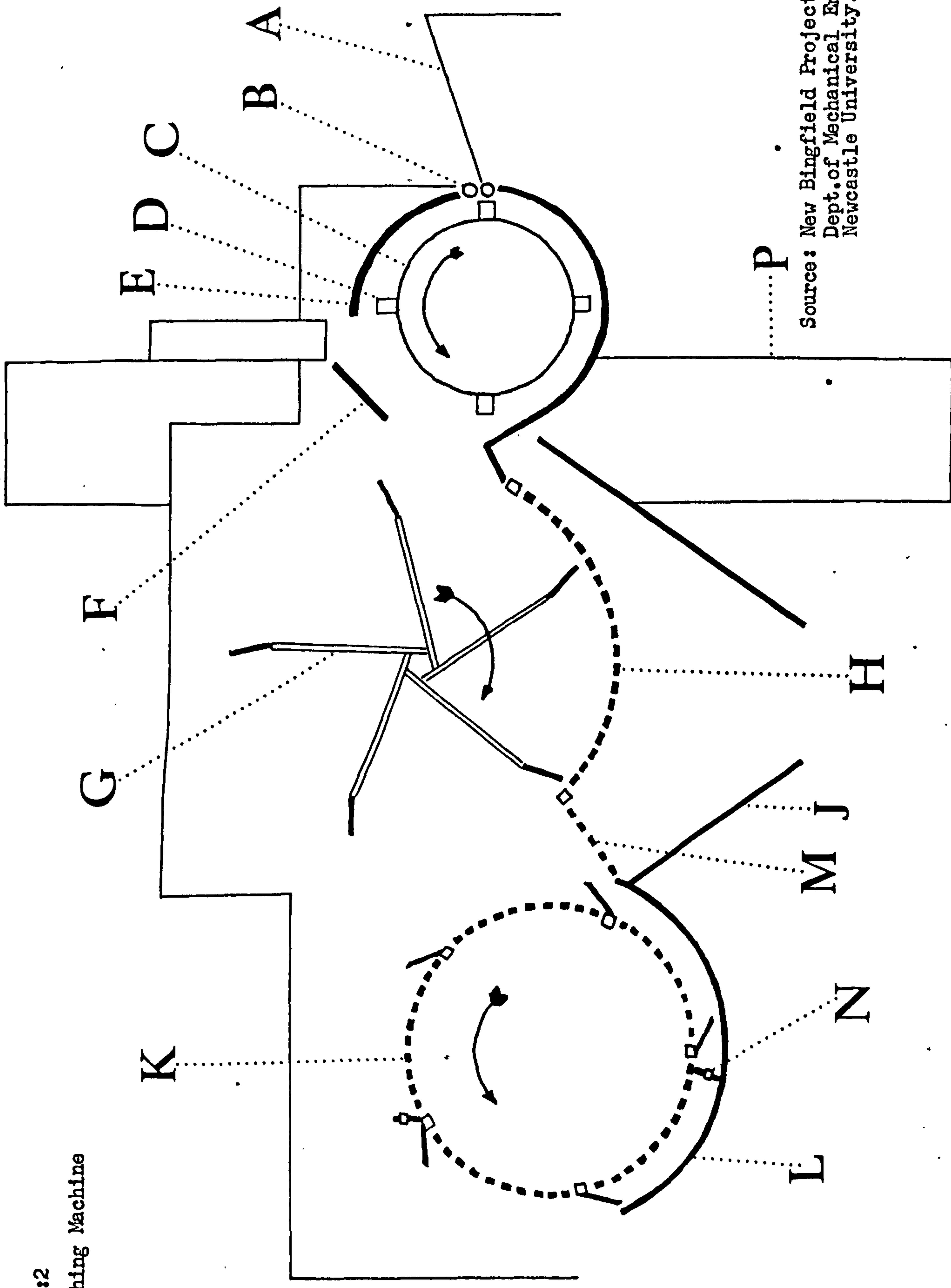
Appendix

Figure 20:2 is a diagrammatic representation of the workings of a threshing machine still operational in Northumberland. Built at Bingfield about 1840, it was re-erected at West Side Farm, Newton, Stocksfield by its owner, Mr. J.E. Moffit and the Department of Mechanical Engineering at Newcastle University in 1966.¹²¹ It was powered by steam and is typical of the Meikle or Scotch threshing machine of the period 1786-1850.

Corn was placed on the feeding board (A) and fed, ears first, through the roller (B) to come in contact with the fixed scutchers (D) on the revolving drum (C). The grain was knocked out, and with the straw, was swept upwards between drum and concave (E) and deflected by the board (F) to meet with the circular rake (G). The function of this addition was to restore some order to the straw and to allow the grain to pass through the straw, through the concave screen (H) to the shute (J) below. The straw, devoid of most of its grain, passed over the secondary separating drum (K), dropping any remaining grain through the slots in the drum as it went. The grain fell onto the concave (L) from whence it was swept by the brushes (N) through the screen (M). Beneath the shute lurked a winnowing machine, almost as frightening in its complexity, which separated the good grain from both chaff and lighter grain. The chaff was sent flying to a distant container, the good grain to a nearby one and the lighter grain, containing unthreshed ears, to an intermediate one from whence it was carried via the bucket elevator (P) to suffer the whole threshing process again. The machine is 20 feet long, 10 feet 6 inches wide and 19 feet high and its design and construction are such that it had to be installed permanently into the building used to house it, making it necessary for the machine to be custom built to suit the conditions imposed upon its installation by the nature of the farm as well as any other special requirements of the original owner.

¹²¹ See the unpublished New Bingfield Project Report, 1966-7, Department of Mechanical Engineering, Newcastle University.

Figure 20:2
The Threshing Machine



Source: New Bingfield Project Report, 1966-7,
Dept. of Mechanical Engineering,
Newcastle University.

D. The Communication of Agricultural Ideas

D

THE COMMUNICATION OF AGRICULTURAL IDEAS

The conditions most likely to engender and nurture agricultural innovation and to facilitate its diffusion are considered in some detail elsewhere. Present concern is with the means by which agricultural information travelled; the ways in which farmers came to hear of new developments and to be sufficiently convinced of the utility of some to adopt them. Contemporaries seem to have been keenly aware of which agricultural conditions were most likely to foster agricultural innovation and which - generally opposing conditions - were likely to repel invention. On these matters there was broad agreement, but there seems to have been little appreciation of or even much interest in the associated process of communication. Rather there was an almost unanimous feeling that the typical farmer's mind was totally saturated with and insulated by tradition. The great object, therefore, was the winning from the old rather than the introduction of the new. Once tradition had been challenged and defeated, it was felt that agricultural conditions, such as farm size and length of lease, would determine whether the innovation was to become general. "Many difficulties attend the change of an old custom, and, do doubt, habit and prejudice, these greatest enemies to agricultural improvement, will not fail to assist in lending their aid in throwing difficulties in the path, and so attempt to discourage any who are inclined to adopt new improvements."¹

Farmers farmed for profit and it is logical that profit should have been the touchstone of agricultural innovation.² Though profit may have

1 John Allen, 'One-Horse Carts', paper read before Newcastle Farmers' Club, May 5th 1848. L. & P., Bolbec N630.6/2.

2 "Undoubtedly, the right or wrong farming is conditioned by results. We must be always testing our operations by the financial results accruing thereby." Sir Daniel Hall, address to Agricultural Students' Discussion Society, Armstrong College, Newcastle. Journal of Newcastle Farmers' Club, 1923, p.55.

justified innovation, there is little evidence to suggest that the profit of others encouraged farmers to follow their agricultural techniques. In a world where "the leathern purse or canvass bag being full or otherwise being the only indication of money gaining or money losing with many",³ it must be wondered how apparent profit was to the average farmer, how less obvious it was when made by others and how feasible it would have been to attribute increased income to a specific innovation. The 19th century farmer was in general "content to practise the farming he had learnt at his father's knee or over a neighbour's gateway, and to be the Hodge of Punch and the cock on his own dungheap... it must be remembered that the norm was half a century behind, despite the acceleration in the pace of agricultural education imparted in book, periodical, agricultural meeting and show".⁴ This apparent ineffectiveness of agricultural education and the very little interest it gained among contemporaries is a matter of immediate concern. It seems incredible that so much effort should have gone into creating the product of improved agriculture and so little into marketing it.

The Landlord.

Landlords had both an economic incentive and a social responsibility to enlighten their agricultural tenantry. McCulloch saw it as their bounden duty to do this. "Considering the wonderful facilities of communication that exist in Great Britain, and the universal diffusion of information by means of the press, the slowness by which agricultural improvements make their way is not a little surprising... It might, one should think, be reasonably enough supposed that the improved practices would now be much more rapidly diffused; but experience shows that this is not really the case... we should anticipate ten times more from the efforts of the landlords to enforce a better system, than from any

3 William Dickinson, 'On the Farming of Cumberland', J.R.A.S.E., 13, 1852, p.224.

4 R. Trow-Smith, A History of British Livestock Husbandry, 1700-1900, 1959, p.234.

improvement in the knowledge of the farmers."⁵ But again, the panacea was to change agricultural conditions following the theory that agricultural techniques would improve as a direct consequence. The landlord as a source of information, as a practical example of or incitement to the use of better techniques was regarded as being of much less importance than the landlord as ruler of all he surveyed. Of course, the landlord had advantages the ordinary farmer was unlikely to have possessed. He was more able to absorb the costs of unsuccessful innovations. "To such a man occasional failures are of little importance, though they might be serious to ordinary farmers, who, on this account, are seldom very forward in venturing out of their usual routine. They wait until the new path be opened and cleared by others, and then enter upon it with caution, and proceed no further than they find it safe and easy."⁶ But this did not mean there was a ready channel of communication between landlord and tenant. "The example of one who is a good farmer, must have a much more beneficial effect in his neighbourhood, than that of a great landholder, however successful his practice may be."⁷ A man whose profit produced agricultural techniques was hardly likely to inspire another whose agricultural techniques produced his profit. It is suspected that a massive communications gap matched the social divide between the tenant and his landlord. A letter from George Boswell to George Culley - both eminent though practical farmers - exemplifies these different attitudes towards agricultural improvement.

"I've just had a Letter from Sir John Sinclair acquainting me with the establishment of a Board of Agriculture, and with Desiring me to attend it in London as they wished to try an experiment of watering Hyde Park & Saint James Park. I have not yet answered it - He is quite ignorant of my situation in

5 J.R.M^cCulloch, Statistical Account of the British Empire, 1837, 1, pp. 545-6.

6 Review of 'The President's Report of the Workington Agricultural Society', 1819, F.M., 21, 1820, p. 480.

7 Ibid.

Life - it will not suit my inclinations nor pocket to go two hundred miles as my expense [sic] to gratify the idle curiosity of every person that chuse to ask it - I have had one or two of these excursions already - pro bono publico, won't always do. I have very much doubt of the utility of these things in the hands of Lords and Dukes. Plain Country Farmers are not at home when they are with such sort of Folks. My hand, heard & Table such as it is are allways [sic] at the command of my Friends and nothing give me greater pleasure than to exchange mutual knowledge; but to dance attendance upon great Folk, & to answer such Questions as they may deign to ask you & then with an ungracious Nod be told you are done with - will not suit the stomach of your sincere Friend."⁸

Contemporary commentators were generally keen to attribute any flow of agricultural information to gentlemanly origins. Certainly many of the surviving records are the papers of such gentlemen, and a preponderance of the material contributed to the agricultural press either emanated from them or their direct dependents or was to be read by them. The servile fawnings of the anonymous contributor of the Cumberland Agricultural Reports to the Farmer's Magazine provide ample evidence of an attitude divorced from all possible reality.⁹ Good agriculture was apparently what J.C. Curwen, Esq., M.P. and President of the Workington Agricultural Society practised: bad agriculture anything else practised by Cumberland farmers. "Stimulated by this gentleman's example... the farmers in general in this county, had got into the road of improvement."¹⁰ Reports abound of "rapid improvements in agriculture, begun at first by the gentlemen, and followed up with great spirit by the tenants",¹¹ and

8 George Boswell to George Culley, 1793. NCRO/ZCU/18.

9 See, for example, Cumberland Quarterly Report, F.M., 15, 1814, p.120.

10 Letter from A.B. of Cumberland, 1807, F.M., 10, 1809, pp.466-8. See also the tribute of Francis Sibson, F.M., 15, 1814, p.468.

11 Sir John Sinclair, Old Statistical Account of Scotland, 1797, 4, p.379 (parish of Dunse, Berwickshire).

have often been accepted at face value by later commentators. "Coke, by the timely impetus which he gave to agriculture, raised the whole standard of cultivation throughout the kingdom, so that, before Bonaparte became all powerful, England became self-supporting. But for this fact, it was confidently asserted by those who lived at that date, but for the energy and determination of the man who was the first to give and the most indefatigable in sustaining that impetus, England's very existence as an independent power would have been at stake."¹² That this sort of adulation of landlord influence can be accepted at the same time as reports that Coke's "improvements did not spread at the rate of a mile a year",¹³ and others that new techniques, though successfully introduced, met with no imitators among ordinary farmers,¹⁴ is a measure of the dichotomy in thinking that has existed and continues to exist in this matter. This is largely a result of the shortage of alternative or contradicting evidence. Ordinary farmers left few records and estate papers rarely abound with reports of landlord failure in the introduction of new practices.

Yet occasionally it is evident that the landlord was attempting to encourage innovation. Sir John Delaval is known to have sent new implements from London for trial on his Northumberland estates (see pp. 92-4), but his agent was far from pleased when he discovered that the overseer at Hartley South Farm had "sent to no nearer a Market than Carlisle for a Plow and a Machine; not only buying the Same at a high Rate; but foolishly increasing the Price thereof, by such a Long Carriage. He says he had Lady Delaval's Order for so doing, which no doubt (if true) is a Sufficient Vindication of his Conduct. But if he had no such Order, then sure it must Appear both Unjust, & thoughtless to squander Money at

12 A.M.W. Stirling, *Coke of Norfolk and his Friends*, 1912, p.190.

13 G.E. Fussell, 'The Dawn of High Farming in England', *A.H.*, 22, April 1948, p.91. See also A.M.W. Stirling, *op.cit.*, 1912, pp.174-5.

14 Nancy Riches, *The Agricultural Revolution in Norfolk*, 1937, pp.113-4.

this Juncture, in such an Unnecessary Manner".¹⁵ Clearly, innovatory enthusiasm from above was not always greeted with the gratitude it perhaps deserved.

Whether the average gentleman was better informed on agricultural matters than the typical farmer is doubtful. Sir Charles Monck of Belsay based his information on "Conversation with gentlemen of most knowledge and experience in other parts of England, together with observation upon the practice of the tenants of an estate, which I have in a distant county".¹⁶ He appears to have had no practical agricultural experience and his knowledge of his estate was derived from an annual inspection; yet between 1832 and 1862 he belaboured his tenants with extremely detailed and often remarkably silly agricultural advice (see pp. 96-8). How much attention his tenants paid to his strictures is perhaps best gauged by the fact that though he came near to ordering them in 1835 to grow peas instead of clover once in eight years to avoid clover failure, his tenants grew oats instead, contrary to the directions of "other gentlemen in other parts of England, with whom he communicated".¹⁷ The tenants' reaction to Monck's advice based on information received from "the most eminent agriculturists in different parts of England"¹⁸ to sow less ray grass with their clover despite their problems of clover failure, can well be imagined. It is thought that there was a significant gulf between tenants and landlords caused partly by landlord ignorance of practical agricultural conditions, but more by social divisions. There appears to have been a strong and general resentment amongst practical farmers of interference from above. Even the practical farmer's loyalty to Farmer George had its limitations. "The influence of Majestic rays

15 John Ocheltrie to Sir John Delaval, Dec.29th 1780. NCRO/2DE/4/43/7.
See also William Noble to Sir John, Dec.24th 1780. NCRO/2DE/4/47/2.

16 Abstract of Rent Day Speech, Nov.26th 1838. NCRO/ZMI/B41/7.

17 Rent Day Speech, Nov.24th 1840. NCRO/ZMI/B41/7.

18 Rent Day Speech, Nov.23rd 1843. NCRO/ZMI/B41/7.

will scarcely kindle the dormant spark in the Farmers breasts. for though in his going to see the Farms round Weymouth he observed & told them 'bad Farmers, bad bad Farmers, thistles, thistles thistles Farmer, earth hills, earth hills Farmer every where, they should be cut, yes cut & kept neat... Yet thistles and earth (ant) hills still grow at Winford."¹⁹

One means landlords sometimes adopted of encouraging what they considered to be improved agricultural practices among their tenants was the distribution of prizes as rewards for conspicuous effort in the approved direction. It was a method which had been used by Thomas Johnes in 1800 in Wales to discourage his tenants from the perpetual repetition of oat crops.²⁰ Locally, Sir Henry Vane Tempest was giving away silver cups in 1804 for the best-run farm, best laying down to grass, best cow, wether, gimmers and for the most hedging and draining.²¹ Sir James Graham apparently gave away champion Galloways to his Netherby tenants in the 1820s to encourage the diffusion of the breed²² - a method which would have caused Bakewell or Culley considerable upset - and John Grey shared £5 annually in the 1840s among the reapers of the Greenwich Hospital Estates who had performed their work most satisfactorily.²³ Whether such methods did much to stimulate diffusion is not known, but Benjamin Bell thought it worthwhile proposing a scheme to be administered by the Board of Agriculture of distributing half a million pounds annually to improving farmers.²⁴ While such methods may well have appealed to the paternalistic nature of landlords, it must be doubted whether the ordinary farmer would have been as delighted with his landlord's trophy as he was perhaps meant to be. Young had

19 George Boswell to George Culley, Oct.2nd 1792.NCRO/ZCU/17.

20 A. Hunter, Georgical Essays, 1803, pp.331-4.

21 N.C., June 9th 1804.

22 William Dickinson, op.cit., p.252.

23 N.C., Sept.15th 1843.

24 Benjamin Bell, Essays on Agriculture, 1802, pp.273-4.

suggested the most appropriate reward would be "an ornamental model of a plough in gold or silver, so curiously wrought as to be an object of beauty and shew; and on the mould board the inscription. A man would place such a thing in a glass case, and set it where it might be seen: but a medal, unless a hole is drilled through it, and you wear it pendant from a button hole, is seen by no one..."²⁵ One cannot help thinking that no sort of ornament was likely to be sufficient justification on its own for the adoption of new practices and that those who sought to encourage the diffusion of agricultural innovation in this way were seriously out of touch with reality.

Experimental Farms,

The enthusiasm shown by some agriculturists for experimental farms - particularly local ones - was largely a reaction against blind acceptance of theoretical improvements. "There is scarcely a country in Europe... in which a large and well established experimental farm would not be of more real and efficient use than a force of academies."²⁶ Many suggestions were made that they should be established in each county throughout the country as first-hand evidence of the most improved agricultural techniques in actual practice.²⁷

Although none was ever established in either Durham or Northumberland during this period, efforts were made to introduce them in both counties. Mention of a proposed one in Leicestershire was made by Nathaniel Stubbins to Culley in 1793,²⁸ and plans were laid for the purchase of 200 acres for such a project in Durham in 1796.²⁹ It was planned that the institution "would afford to neighbouring farmers examples of the most approved rotation of crops; of the most advantageous

25 Arthur Young, Political Arithmetic, 1774, p.173.

26 Arthur Young, A.A., 4, 1785, p.459.

27 See, for example, letter from A.G.', A.A., 4, 1785, p.111.

28 Nathaniel Stubbins to George Culley, Feb.20th 1793. NCRO/ZCU/18.

29 See N.C., July 23rd 1796 and A.A., 27, 1797, pp.204-6.

management of land, and of the use of the best implements of husbandry.³⁰ This was all very commendable, but it is surely doubtful whether a farm financed by the subscriptions of gentlemen, administered by a committee of gentlemen; requiring a capital of over six times the rental and expected to make an annual loss of some £300 for many years³¹ would have solicited a great deal of respect from practical farmers. Dr. Anderson was apparently appointed to superintend the farm,³² but no more is ever heard of the venture. A similar plan was mooted in Northumberland in 1797³³ and meetings were held at Morpeth and Alnwick.³⁴ A final resolution declared that taxes were already far too high for such extravagance to be contemplated.³⁵ If John Bailey felt any remorse, he managed to withhold it in his bald statement to Lord Tankerville,³⁶ and Frank Sitwell's plan to renew the project in 1806 met with a stoney response from George Culley. "I told you, when you named this at Cornhill, that I thought very well of an Experimental farm. But I had no Idea of engagin an undertaking of that sort at my time of day. I certainly wish you all manner of success. But I shall have nothing to do with the concern."³⁷ Considering how useful in the diffusion of agricultural information it was claimed experimental farms would have been,³⁸ it is remarkable that nothing concrete ever materialised. Perhaps it is indicative of a situation in which there was as much merit in lip service as in actual service to the community: certainly it shows that experimental farms were not as essential to innovation diffusion as contemporary literature suggested and that other avenues of communication were of much greater importance.

30 Proposals for Establishing an Experimental Society of Agriculture in the County of Durham. D/Sa/X/68.

31 N.C., June 30th 1796.

32 N.C., Jan 7th 1797.

33 Printed plans exist in NCL/L630 and in AC, Library, 187 A/31 Shelf 43/2.

34 N.C., Sept. 16th and Nov. 11th 1797. 35 N.C., Dec. 30th 1797.

36 "The Agriculture Society, - is dropt, for the present." John Bailey to Earl of Tankerville, Dec. 26th 1797. NCRO/Tankerville Box 1/D/3 unsorted.

37 George Culley to Frank Sitwell, June 24th 1806. NCRO/ZCU/31. See also Frank Sitwell to George Culley, June 24th 1806. NCRO/ZCU/28.

38 Bailey and Culley, 1805, pp. 192-3.

Agricultural Books and Periodicals.

It was always the avowed intention of the agricultural press to encourage the diffusion of the best agricultural practices. Agreement on what these were was naturally not always unanimous, nor was information written for a national audience necessarily relevant in particular localities. It has been argued that the best practical farmers would never even have considered adopting Tull's suggestions of rejecting all manure, reducing seed from $2\frac{1}{2}$ bushels to 3 pecks per acre and sowing only one crop year after year.³⁹ James Donaldson knew of only one devotee who, though he had "not derived much emolument from pursuing this method of culture, he may at least enjoy the satisfaction of reflecting, that he has afforded much amusement to the old-fashioned farmers in the neighbourhood."⁴⁰

There is little Northumberland evidence of farmers implementing information derived from agriculture literature. George Culley remarked that he had "tried some of the Yellow Turnip, so much recommended in the farmers Magazine. But we don't think it at all so valuable, as the Swedish or Baga?"⁴¹ and John Bryers wrote, apparently with some mystification, to Sir John Delaval in 1783, "I also rec'd two Books of Husbandry (by Hart, and Hunter) with minutes by Lady Hussey Delaval for trials to be made of Sundry sorts of manure etc mentioned in them".⁴² Local newspapers carried numerous advertisements for agricultural works, but it is perhaps idealistic to think of the average farmer amusing himself of an evening with the Commercial and Agricultural Magazine. "In the evening when he retired, weary with toil... he then passed his after hours in mental or bodily repose in a way not very conducive

39 T.H. Marshall, 'Jethro Tull and the New Husbandry', Ec.H.R., 2, 1929-30, pp.41-60.

40 James Donaldson, Modern Agriculture, 1796, 3, p.93.

41 George Culley to Alex Hamilton, June 3rd 1807. NCRO/ZCU/31.

42 John Bryers to Sir John Delaval, March 14th 1783. NCRO/2DE/4/20/39.

to the improvement of his mind or the advancement of his knowledge."⁴³ Certainly, periodicals of the late 18th and early 19th centuries, such as the Farmer's Magazine, the Agricultural Magazine or the Annals, imagined that they had a great role to play in spreading agricultural knowledge and it has sometimes been assumed by later writers that imagination and reality were identical. "The Annals of Agriculture spread far and wide enthusiastic accounts of [agricultural] meetings, and, indeed, their importance as a means of disseminating agricultural information can hardly be overestimated."⁴⁴ This is nonsense. In 1788, Arthur Young, the editor and instigator of the Annals, had pleaded for customers. "There are in the three kingdoms 117 counties, the present sale of the work does not amount to four to a county, from which four a pretty considerable deduction is to be made for town, book-clubs, etc. the present purchasers, who are neither landlords nor tenants."⁴⁵

If farmers in general were reluctant to purchase these periodicals, Northumberland farmers seem to have been especially reticent to contribute to them. Young wrote optimistically in his first volume of the Annals for an account of the Northumberland method of cooking potatoes for horses, "Will no Northumberland gentleman send me an account of the method here referred to?"⁴⁶ Years later, he wrote to George Culley, "I have thought it very surprizing that a man who knows like you how to handle the pen & y^e plough equally well should not long ago have communicated something to the Annals. Your great County of Northumberland never afforded me a single letter w^{ch} is something of a reflection on it...".⁴⁷ Culley was also in demand to contribute to the Farmer's Magazine. The editor wrote in 1803, "It is precisely such correspondents

43 John Grey, Address to Tyneside Agricultural Society, N.C., Oct. 8th 1847.

44 Nancy Riches, op.cit., 1937, pp.33-4.

45 Arthur Young, A.A., 10, 1788, p.593.

46 Arthur Young, A.A., 1, 1784, p.283.

47 Arthur Young to George Culley, March 10th 1790. NCRO/ZCU/3.

as you that I want; men who have learned wisdom in the school of experience and who do not attempt to pass base coin for sterling Money. I am under the Necessity sometimes of inserting Communications that are not altogether to my Mind, merely because that better cannot be got and also from a desire to keep well with people, who though imperfectly qualified to write are yet good friends to the Magazine".⁴⁸ Indeed, many of the contributions were pitiful. Volume 3 of the Annals had contained the plea of George Edwards of Barnard Castle, Co. Durham, that he be given £1000 to enable him to spread his knowledge of improved agriculture.⁴⁹ Perhaps the cranks were easily identified, but it is questionable in how much esteem even Arthur Young, editor of the Annals and easily the foremost agricultural writer of the period, was held. "Arthur Young was always well known as the worst practical farmer in his county."⁵⁰ Northumberland farmers were not unaware of this. "At Mr. Young's I did not see much worth attention, indeed there my disappointment was great - in read^g his Annals, he immediately discovers the smallest fault in any other persons management, from that I imagined to find an example of the Old Arcadian Agriculture - instead of that I met with a Hodgepodge of everything without arrangement or system - Chicory the chief production..."⁵¹ Thomas Stone considered Young "the Munkhausen of the age. This circumstance has, for many years, been so well known to the cultivators of the soil, that you had not, happily, the power of misleading them. The only effect your works have produced has been to make them, in a great measure, reject all writings upon the subject as wild and chimerical".⁵² Despite Young's high opinion of

48 Editor of F.M. to George Culley, March 17th 1803. NCRO/ZCU/25.

49 A.A., 3, 1785, p.196.

50 Thomas Bell, History of Improved Shorthorn Cattle, 1871, p.250.

51 William Mure to George Culley, March 31st 1793. NCRO/ZCU/18.

52 Thomas Stone, A Review of the Corrected Agricultural Survey of Lincolnshire by Arthur Young, 1800, pp.21-2.

Lincolnshire farming, it was alleged that not "one-five hundredth part of the farmers in this county are much alive to improvements; those gentlemen he has mentioned are amateurs... Has Mr. Young in a single instance told us that the example of any one of those gentlemen has diffused a spirit for improvement in the parishes or districts contiguous to that in which they reside? No; they are by the common farmers considered as men who, like Mr. Young, are book-learned, and, in their vulgar conceptions, are spending their money without any prospect of meeting with a return".⁵³ This was damning criticism indeed of not only the doyen of agricultural publicists, but of what might otherwise have been an important means of disseminating agricultural knowledge. Young's vicious attack on Culley's 'Observations on Livestock' - one of the most readable and straight-forward agricultural texts of the age - because it did not contain the experimental observations that "this enlightened age of natural philosophy... expected"⁵⁴ serves only as condemnation of the utility of the bulk of agricultural literature.

It is doubtful whether the General Views of the Agriculture of the various counties organized by the Board of Agriculture from 1793 were any more successful in imparting reliable agricultural information to a wider audience of active farmers. The standard of the County Reports varied widely, as did the agricultural knowledge of the reporters, who were allowed only a pittance in time and money to complete their accounts.⁵⁵ The Northumberland Report went through five editions,⁵⁶ but nothing is known about the total number of volumes printed or of their effect on the ordinary farmer.⁵⁷ As the Reports were "printed at the Expence and

53 Ibid., pp.74-5.

54 A.A., 6, 1786, pp.414-5.

55 The best though not the least biased appraisal of the Survey's faults is in William Marshall, Review and Abstract of the County Reports to the Board of Agriculture, 1808, 1, pp.vii-xxxix.

56 1794, 1797, 1800, 1805 and 1813. The 1805 edition was reprinted in 1972, with an introduction by D.J. Rowe.

57 See Bailey and Culley, 1805, reprinted 1972

and Risk of the respective Surveyors",⁵⁸ it may be imagined that their promotion was limited. Certainly access to the original 1794 version was available only to those recommended by Members of Parliament.⁵⁹ It was estimated that the complete set of Reports would have cost over twenty guineas and that "at such an extraordinary price, there is no reason to suppose the British farmers will be much benefited thereby".⁶⁰ It was generally felt that "The high price of the Reports collectively, and the voluminous matter an Inquirer has to wade through, before he can select what applies to his own particular concerns, has deterred the Practical Farmer from availing himself of those authorities".⁶¹ And this must have been the case with most of the agricultural literature. Despite all the high aims and ideals of the publicists for the widespread diffusion of agricultural improvements, it would seem that their efforts had little or no influence on the ordinary farmer.

Local Newspapers.

It is fortunate that the Newcastle Courant was published throughout the period 1750-1850 and that copies survive for all but a few months of this century. The Courant was always a business paper, stiff with Tory and High Church principles and very much concerned with advertising.⁶² Its chief rival was the Newcastle Chronicle, but this paper never seems to have enjoyed the same popularity, was not published throughout the period and not all its copies have survived. Table D1 shows the dominance of the Courant over other newspapers in the North and Map D1 the spatial extent of the paper's influence.

58 N.C., May 13th 1797.

59 N.C., July 5th 1794.

60 James Donaldson, op.cit., 1796, 4, p.326.

61 William Lester, A History of British Implements and Machinery Applicable to Agriculture, 1811, preface.

62 Ernest Youngson, The Reform Movement in Northumberland and Durham 1815-32, typescript dated 1936. L. & P. N324/21.

Table D1

Circulation of Northern Newspapers 1841-1843

	<u>Average Weekly Circulation</u>			
Newcastle Courant	...	...	...	4,118
Newcastle Chronicle	..	...	...	2,910
Newcastle Journal	...	...	...	2,169
Tyne Mercury	...	...	...	461
Gateshead Observer	...	...	...	1,980
Sunderland Herald	...	...	...	1,051
Northern Times	..	...	...	808
Durham Chronicle	...	...	...	1,182
Durham Advertiser	...	...	...	769
Carlisle Journal	...	...	...	2,134
Berwick Advertiser	...	...	...	743
Berwick Warder	..	...	...	628
Whitehaven Herald	...	...	...	725
Westmoreland Gazette	.	...	...	628
Cumberland Pacquet	..	...	...	777
Kendal Mercury	..	...	...	798

Source: Newcastle Courant,
Jan. 5th 1844.

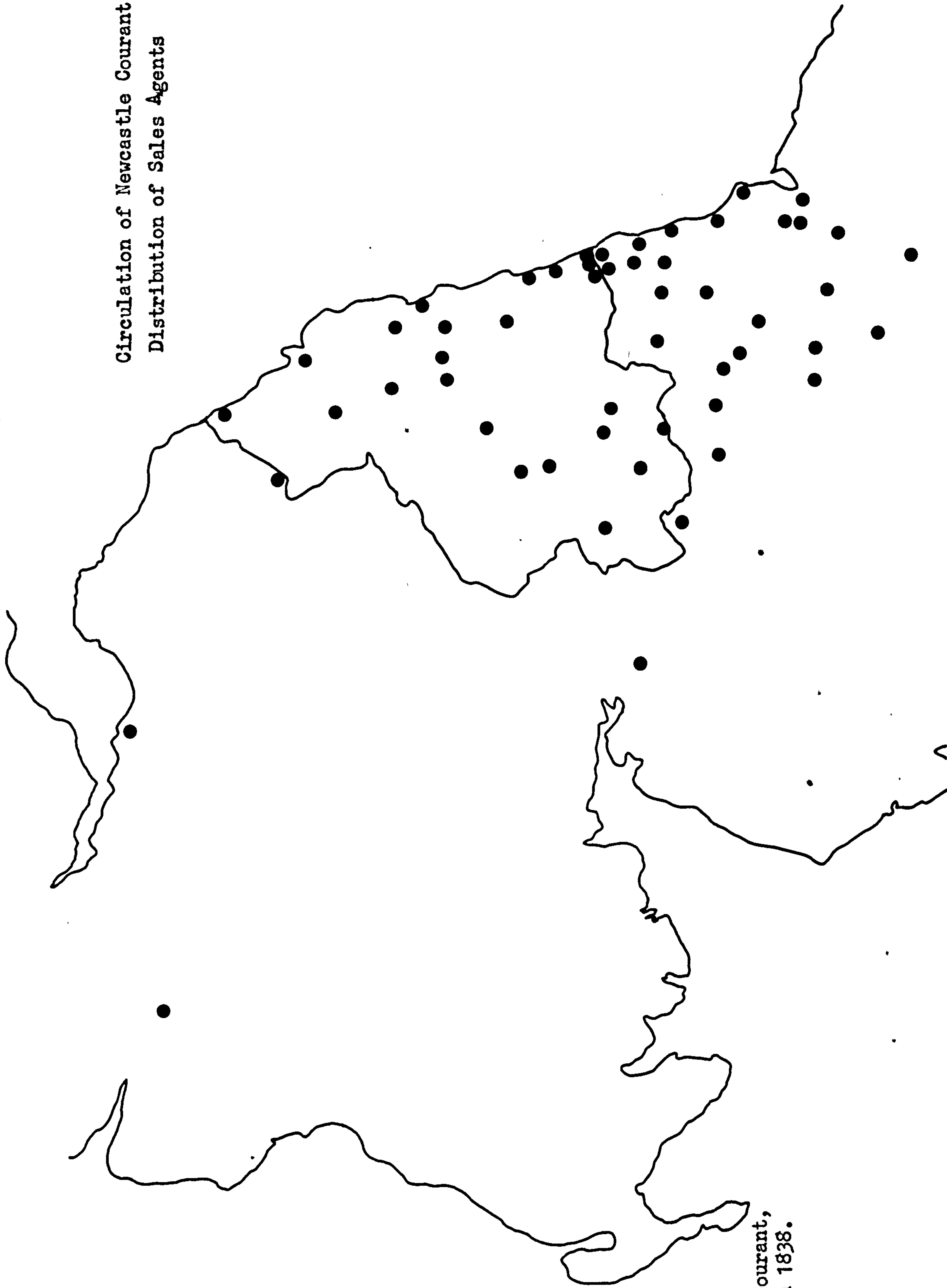
Table D2 illustrates the increase in the paper's circulation figures during the first half of the 19th century.

Table D2

Circulation of the Newcastle Courant

	<u>Copies per Week</u>	<u>Source</u>
1808	2,564	N.C., Dec. 3rd 1808
1811	2,855	N.C., Jan. 4th 1812
1814-1833	over 2,500	N.C., May 11th 1833
1840	4,150	N.C., Jan. 1st 1841
1841-43	4,118	N.C., Jan. 5th 1844
Jan, 1846	4,500	N.C., Jan. 9th 1846
July 1846	5,000	N.C., July 17th 1846
1849	over 5,000	N.C., March 23rd 1849

Circulation of Newcastle Courant
Distribution of Sales Agents



Source: Newcastle Courant,
August 17th 1838.

It was reckoned that about 40% of the circulation was in Durham and most of the remainder in Northumberland,⁶³ and that about 25% of copies went to farmers, each to be read by about six people. Hence the agricultural circulation in 1841 was stated to be 36,950.⁶⁴ It would seem then that local newspapers had the potential to have been active in the diffusion of agricultural information. Certainly farmers must have found it necessary to consult the local paper fairly regularly to find out about market prices, to discover a farm to let or a stock sale to attend. With this likely agricultural nucleus as an audience, the paper had it in its power to embark on the deliberate broadcasting of agricultural knowledge and in 1796, the Printer declared it his aim to publish "an Account of every Improvement in Agriculture".⁶⁵

In fact, little agricultural advice appeared in the pages of the Courant. Occasional monthly agricultural reports were reprinted from London papers after 1815 and interesting pieces of information were often reprinted from other sources. These included a recipe for a pickle to prevent smut in wheat,⁶⁶ a means of weeding wheat by grazing it with sheep,⁶⁷ reminders to use chaff and brewer's grains as animal feed,⁶⁸ advice to feed rotten sheep on broom⁶⁹ or on the utility of a double-furrow plough.⁷⁰ Occasionally, correspondents sought agricultural advice from other readers⁷¹ and some few reports, such as one on the advantages of paring and burning,⁷² were the products of local experience it was felt should be shared.

But the Printer's primary aim was to sell his paper: accurate and useful information was a secondary consideration. Hence, then as now,

63 N.C., March 23rd 1849

64 N.C., Jan.1st 1841

65 N.C., Feb.20th 1796

66 N.C., Nov.1st 1777

67 N.C., June 27th 1778.

68 N.C., Jan.16th and April 10th 1790

69 N.C., April 2nd 1803.

70 N.C., May 2nd 1802.

71 N.C., Oct.29th 1785.

72 N.C., Dec.29th 1781.

there was a marked proclivity for the more extravagant tale. Caterpillars could be eradicated from turnip fields if ducks were sent in to devour them,⁷³ mice from haystacks with the aid of a few sprigs of mint,⁷⁴ and great things were expected of a plough designed to work by wind power.⁷⁵ The newspaper seems to have been a medium by which the tricksters and charlatans of agricultural invention made their money. The secret of a patent manure was offered on completion of a £1000 subscription to reward the inventor,⁷⁶ a £200 subscription revealed that radish seed planted with turnip solved the problem of turnip flies by attracting them from the turnips to the radishes,⁷⁷ and 2,000 guineas was apparently raised by Henry Vagg, who used both John Bailey and George Culley to collect subscriptions, for his special method of eliminating the turnip fly. Mr. Vagg seems to have been particularly unscrupulous for when his remedy was eventually published, he claimed that the fly actually caused little harm, that the real culprit was the slug and that slugs could best be destroyed by flattening them with a roller at night.⁷⁸ Whether the average farmer would have taken these remedies seriously is doubtful; whether he would have profited by them more dubious still. It is certain that the intention was not the general diffusion of the information. When Charles Baker gave notice of his method of preventing smut in wheat, he also offered a reward of 30 guineas to anyone who discovered his method being used by a non-subscriber.⁷⁹

Both the circulation figures and the number of agricultural advertisements (see Figure 7:1 ,p. 81) prove that many ordinary farmers must have had access to the Courant. While much of the agricultural advice offered, particularly in the 18th century, was worthless, the

73 N.C., Aug. 5th 1780, July 26th 1783 and July 30th 1836.

74 N.C., Oct. 26th 1793.

75 N.C., April 13th 1811.

76 N.C., July 11th 1801.

77 N.C., July 3rd 1802

78 N.C., April 26th, June 14th and July 5th 1788; Aug. 8th 1789.

79 N.C., Feb. 18th and Oct 28th 1797.

increasing number of advertisements from implement manufacturers, makers of draining tiles or purveyors of bone or guano manure must have encouraged farmers to keep abreast of the latest practices. Advertisers do not continue to waste money on advertisements that bring no custom. There is little direct evidence of the success of such advertising, but a long and relatively early notice from William Winlaw, a London implement maker, published in the Courant on August 30th 1783 and offering to make "all kinds of Ploughs made use of in the different counties", must surely have been responsible for the letter to him from Joseph Oxley, agent to Sir John Delaval, dated September 9th 1783,⁸⁰ which requested "a good wheel plough Such as are used in and about Norwich or yarmouth". Extensive, sometimes verbatim, reports were printed of speeches made at meetings of most of the County's agricultural societies and these frequently contained critical appraisal of new or existing agricultural methods. If agricultural societies played an important part in the diffusion of agricultural information, then the lengthy newspaper coverage of their proceedings must have been at least partly responsible. The Courant and other local newspapers had the potential to disseminate knowledge and were likely to have been very much more effective than other printed sources.

Agricultural Societies.

The agricultural society of the late 18th and early 19th centuries existed to organize meetings of agriculturists. It provided the opportunity for the display of new implements, better crops or practices and was a forum for the exchange of ideas. Subscription rates were moderate and allowed a member access to the society's meetings, its agricultural library and sometimes a museum, and qualified him to compete for prizes in the local agricultural show.

Table D3 gives some idea of the profusion of agricultural societies and annual agricultural shows in the region during this period. Many had

Table D3

Agricultural Societies in the Northumberland Region
before 1850

<u>Date Founded</u>	<u>Title</u>	<u>Source</u>
1778	Richmondshire Agricultural Society	N.C., April 4th 1778
1783	Durham Agricultural Society	N.C., Aug. 23rd 1783
1801	Agricultural Society of the Circle of Barnardcastle.	N.C., Oct. 24th 1801
1804	Barmoor Castle Sheep Show	N.C., July 14th 1804
1805	Tyneside Agricultural Society	N.C., Sept. 28th 1805
1811	Tweedside Agricultural Society	N.C., Nov. 30th 1811
1814	Dinnington Agricultural Show	N.C., April 30th 1814
1815	Tankerville Arms Sweepstake Show	N.C., April 1st 1815
1815	Newcastle Agricultural Society	N.C., Aug. 5th 1815
1819	Northumberland Agricultural Association	Alnwick Castle Library 187 A/31 Shelf 43/2
before 1827	Willington Agricultural Show	N.C., April 14th 1827
1832	Longbenton Agricultural Show	N.C., Feb. 25th 1832
before 1835	Rothbury Agricultural Society	N.C., Nov. 14th 1835
1836	Northumberland Agricultural Society	Alnwick Castle Library 187/A/31 Shelf 43/2
1836	Coquetdale Agricultural Society	N.C., Feb. 20th 1836
1837	Tyneside Agricultural Society	N.C., Sept. 3rd 1841
1838	Ovington Agricultural Society	N.C., Oct. 19th 1838
1839	Allendale, Whitfield and Hexhamshire Agricultural Society	N.C., Aug. 30th 1839
1840	Tyneside Ploughing Society	N.C., Jan. 10th 1840
1840	Derwent Agricultural Society	N.C., Aug. 28th 1840
1841	Tweedside Agricultural Museum Society	N.C., Feb. 18th 1842
1841	North Tyne and Reedsdale Sheep Show	N.C., Sept. 3rd 1841
1842	Norham Parish Ploughing Club	N.C., Feb. 25th 1842
1842	Wooler Agricultural Show	N.C., April 8th 1842
1842	Bellingham Agricultural Society	N.C., Oct. 14th 1842
before 1843	Chollerford Lamb Show	N.C., Aug. 4th 1843
1845	Newcastle Farmers' Club	N.C., Dec. 12th 1845
1846	Hexham Farmers' Club	N.C., Jan. 2nd 1846
before 1848	Wooler Farmers' Club	N.C., Nov. 17th 1848

a shadowy existence and faded away not long after their foundation. An agricultural society to serve the whole county of Durham, for example, was established in 1783⁸¹ and re-established in 1803,⁸² 1835⁸³ and 1842.⁸⁴ The interest in this sort of activity seems almost to have disappeared after the War. In the 1820s all that appears to have remained were the Willington Show, apparently little more than an annual ploughing competition, the Tankerville Arms Show, an annual sweepstake in the Wooller area which must have appealed to the gambling instincts of local farmers for it persisted from 1815 to at least 1844 and was easily the most enduring of the County's agricultural groups, and the Northumberland Agricultural Association, which existed solely for the petitioning of Parliament on Corn Law matters. The late 1830s and the 1840s saw a resurgence in the popularity of agricultural societies, and particular interest in a new breed of more local and less formal Farmers' Clubs.

It is not difficult to find indication that agricultural societies were stimulating the dissemination of improved methods. After all, their "great utility in diffusing agricultural knowledge"⁸⁵ was generally held to be the justification for their existence, and commentators made much of this fundamental function. "It gives us high pleasure to observe the spirit of emulation which this laudable institution has given birth to..."⁸⁶ "That man indeed was an indifferent observer of nature, who, travelling through England, failed to notice the great improvements effected in the cultivation of the soil within the past few years... gratifying results... mainly attributed to institutions similar to the Northumberland Agricultural Society."⁸⁷ Reports were sometimes more specific,⁸⁸ but they often verged on the ridiculous. Only four years

81 N.C., Sept. 20th, Aug. 9th & 23rd 1783. 82 F.M., 4, 1803, pp. 283-6

83 N.C., Oct. 11th 1834.

84 D/Sa/X/34.

85 G.H. Ramsay, 'On the Utility and Diffusion of Agricultural Knowledge by Means of Farmers' Clubs'. Paper delivered to Newcastle Farmers' Club, Feb. 7th 1846. L. & P., Bolbec N630.6/1.

86 Concerning the Durham Agricultural Society. N.C., Dec. 31st 1785.

87 Matthew Bell addressing the Northumberland Agricultural Society. N.C., Aug. 11th 1848.

88 "... ploughing competitions were calculated to do so much good by

after the first founding of the Durham Agricultural Society, Durham livestock was said to excel "to such a height of improvement has the breed of cattle in that county arose since the institution of that laudable society, and to which no doubt it is entirely owing".⁸⁹ Contemporary enthusiasm should not be over-valued. It should also be seen in perspective. No Northumberland agricultural society until the 1840s ever received the press coverage devoted to, for instance, the Society for the Improvement of the English Marigold.⁹⁰

There is some justification for thinking that agricultural societies were not the successful diffusers of innovation that they were claimed to be. The Durham Agricultural Society founded in 1803 had only 21 members and no other persons between the Tyne and the Tees were to be allowed to join or visit.⁹¹ It was freely admitted that the Northumberland Agricultural Society flourished "as nearly the whole of the influential land-owners of the county have given it their countenance and support".⁹² Many of the larger societies were dependent on the goodwill, membership and money of landowners. Of the 101 original members of the Tweedside Agricultural Society, only 22 were described as tenants or farmers.⁹³ When Matthew Bell failed to start a depot for agricultural implements in Newcastle, it was because "on applying to some landlords for a subscription, the answer was - it was of no use, for they could get more implements than ever could be used."⁹⁴ Godfrey Sinclair felt forced to resign as Secretary of the Northumberland Agricultural Society because of "the very slight support the society has met with from the landowners of the county".⁹⁵

inciting the men to emulation." Report of Ploughing Meeting held by the Northumberland Agricultural Society at Gubion, near Morpeth. N.C., Feb.10th 1843.

89 N.C., Sept.22nd 1787.

90 For one example see N.C., Sept.23rd 1808.

91 F.M., 4, 1803, pp.283-6.

92 Report of Morpeth Meeting of Northumberland Agricultural Society. N.C., Oct.11th 1839.

93 N.C., April 25th 1812.

94 Matthew Bell to Newcastle Farmers' Club. N.C., Jan.14th 1848.

95 N.C., June 14th 1844.

The same meeting was congratulated "on the number of gentlemen representing the landed interest of the county, who had that day given their attendance, for... at the annual meetings of the society, instead of the support the society so well merited, and so much required from the landowners, none of them ever attended".⁹⁶

A situation seems to have existed in the larger societies in which landlords dominated the membership, but declined to play an active role. The later and much smaller Farmers' Clubs were a reaction against this. The Hexham Farmers' Club "certainly had hitherto not experienced much assistance from the landed proprietors of the county",⁹⁷ and declared that by remaining small and severely practical, it "would be as much distinguished by the information it diffused on agricultural subjects as any similar institution had hitherto been".⁹⁸ This had been the earlier, though unsuccessful, aim of the Agricultural Society of the Circle of Barnardcastle, to limit membership to local "practical Farmers and Improvers of Ground... a County Society, composed of a different Class of Persons, casting its Views, in a mere transient Manner, over an extensive Province, must be admitted to be altogether unequal to the Purpose of the Design".⁹⁹ The Newcastle Farmers' Club stressed the importance of monthly meetings, of a museum and an agricultural library;¹⁰⁰ its papers were always to be on strictly practical subjects,¹⁰¹ it sponsored such utilitarian measures as dynamometer testing of local plough types and claimed "there was one thing they could not say against them as a society, and that was, that they were unlike [sic] many other farmers' clubs which were well begun, but soon generally ended in too many dinners,

96 Ibid. G.Darling to Northumberland Agricultural Society.

97 John Grey to Hexham Farmers' Club. N.C., Jan.15th 1847.

98 Ibid.

99 N.C., Oct.24th 1801.

100 N.C., Dec.12th 1845

101 N.C., Oct 23rd 1846.

and drinking too much wine".¹⁰² Small societies were claimed to be preferable to the large because "local influence was pre-eminently useful in disseminating and enabling agriculture to take a right course, by diffusing practical and scientific knowledge".¹⁰³

Much may have been learnt from the after-dinner conversation and from general social contact at society meetings,¹⁰⁴ but it would appear that many societies did little more than provide the excuse for carousing. When the first Barmoor Castle Sheep Show was held in 1804 "upwards of 150 amateurs in the breeding line assembled... Noblemen, baronets, landlords, and tenants, from both sides of the Tweed, sat intermixed like united Britons, discussing the advantages which must evidently result from gentlemen of landed property becoming the patrons of agricultural experiments; and many appropriate toasts were drank on the occasion".¹⁰⁵ The reaction of G.H. Ramsay's audience to his ideals that societies existed to diffuse agricultural knowledge and not primarily to hold shows and dinners was typical. "Take away the show and the premiums, and you take away the zest of the meeting (A Voice: The dinner is the zest)".¹⁰⁶ It may be wondered how much practical information changed hands at a meeting at which the Duke of Northumberland presided:¹⁰⁷ certainly not as much as at the sort of gathering where the speaker could say "To leave theory, however, as we are all practical people here, I will tell you what I have myself seen...".¹⁰⁸

It may well be that the County's agricultural societies made more impact on the agricultural community through agricultural shows where the latest implements and best livestock were actually exhibited. Prizes were

102 G.H.Ramsay to Newcastle Farmers' Club. N.C., March 26th 1847.

103 Mr.Ogle to Tyneside Agricultural Society. N.C., Oct.12th 1849.

104 See John Grey's address on drainage to Hexham Farmers' Club, J.N.A.S., 1847, p.17.

105 N.C., July 14th 1804.

106 G.H. Ramsay, op.cit.

107 Meeting of Northumberland Agricultural Society. N.C., June 9th 1848.

108 John Grey to Hexham Farmers' Club, op.cit., p.18.

offered to encourage improvement through competition,¹⁰⁹ though an interesting indication of the paternalistic attitude of some of the earlier and larger societies were the prizes generally offered for the servant who had been with his master longest and for the labourer who had reared the greatest number of children without resorting to the parish. A curious omission from nearly all prize lists of the earlier societies was awards for implements. Only the Tweedside Agricultural Society gave premiums for these; 16 were recorded as having been distributed between 1812 and 1819 and, of these, 8 went to either Andrew Dunn, a millwright, or to David Allan, a joiner, both of Coldstream. Not until the 1830's was more general interest in encouraging implements shown, but the response was not good. Between 1838 and 1850, 13 reports of agricultural shows appeared in the Courant complaining of the shortage of implements.¹¹⁰ In a journal remarkable for the almost total absence of critical comment, this is significant. Even when implements were available for examination, a show ground was perhaps not the best place for judging their merits. "There were individuals in the neighbourhood who had purchased implements of reputed excellence, and which had gained premiums for their good construction... but on their being put into operation in this district it was ascertained that the report given of them was by no means borne out by the results when put into practical operation."¹¹¹

Whether the premiums offered at the shows were any encouragement to improve agricultural methods is very doubtful. The Tyneside Agricultural Society held 30 shows between 1807 and 1821 which were reported in the Courant. Table D4 gives a summary of the results in the competition

109 See, for example, the prize list of the Tyneside Agricultural Society, Newcastle Advertiser, Sept.30th 1813.

110 N.C., Oct.12th 1838; April 5th, Oct.11th 1839; Aug.27th, Sept.3rd, Oct. 1st 1841; July 29th, Sept.23rd 1842; Oct.4th 1844; Aug.22nd 1845; Aug.20th, Oct.8th 1847; Aug.9th 1850.

111 Sir M.W.Ridley to Newcastle Farmer's Club. N.C., Jan.14th 1848.

for prizes in all the sheep, cattle and turnip sections.

Table D4

Prize-Winners at the Tyneside Agricultural
Society's Shows

Section	Total No. of Prizes	Total No. of Winners	Dates for which Information Available	Notes
Turnips	23	15	1805-19	-
Sheep	47	21	1805-21	1 Winner took 12 prizes (26%) 4 Winners took 25 prizes (53%) 5 Winners were called Bates.
Cattle	109	29	1805-21	7 Winners took 65 prizes (60%)

Source: Newcastle Courant, 1805-21.

It is quite obvious that only in the turnip section was there any chance at all of a new farmer being encouraged by winning a prize. In the other sections, prizes were awarded to the same few farmers year after year, How keen these few were to encourage the methods that had brought their success may be judged by the attitude of two winners at the Society's show in 1808.

"The premium of 10£ 10s for the best bull, was adjudged to Mr.Wm.Donkin, of Sandoe; but in consequence of his refusing to allow him to serve within the limits of the society, at a sum (fixed by the judges) not to exceed one guinea, it was adjudged and paid to Mr.Wm. Jobling, of Newton-hall for the next best. The 2d premium of five guineas for bulls was in like manner adjudged to Mr.Thos.Bates, of Halton, but in his refusing to allow him to serve within the district at 15s it was adjudged and paid to Mr.Wm.Johnson, of Prudhoe."¹¹²

This was the same Thomas Bates who, "When the Tyneside Agricultural Society

was established, in 1804... took an active part in ensuring its success. He was a large exhibitor at the Society's shows, and in one year obtained prizes for best turnips, best bull, best cow, best sow, best road mare, and best sheep".¹¹³ It is suggested that if such behaviour did ensure the success of an agricultural society, then such societies could have played little part in the diffusion of agricultural knowledge. No doubt they provided interest and recreation for landlords and a minority of farmers, but the attitude of their membership and the form of their organization rendered such societies incapable of having any great effect on the agricultural community. The farmers' clubs, established towards the end of this period, may well eventually have exercised a considerable influence. If so, it merely strengthens the contrast between them and the effete organizations they at least partially replaced.

Personal Contact.

Contemporary opinion hints at and surviving evidence points to an appreciable diffusion of agricultural ideas through personal contact. Agriculture was a severely practical occupation; practical both in the application of its methods and in the absolute necessity felt by the vast majority of farmers for a direct financial return from them. Personal experience must always have been the most convincing proof of the utility and profitability of new methods. Although all farmers had contact with the methods used on their farms, more direct contact still was experienced by those who actually sowed the seeds, tended the stock or guided the plough - the farm labourers.

William Marshall thought that custom and tradition were no more responsible for misleading farmers than "the interested persuasions of their labourers (farmers in all countries being more or less warped by the opinion of their workmen)".¹¹⁴ Andrew Grey remarked that improvement

113 Richard Welford, *Men of Mark 'Twixt Tyne and Tweed*, 1895, 1, p.204.

114 William Marshall, *The Rural Economy of Norfolk*, 1787, 1, p.270.

had been slow because of "the unwillingness (by no means unnatural) of the labouring servants, to take the trouble, by a fair trial, of acquiring the same facility in managing the improved instruments, as that which they had attained in managing those to which they had been so long accustomed".¹¹⁵ William Lester thought the problem partly caused by lack of education, but also by the reluctance of labourers who had taken years acquiring skills to learn new ones "which will set them back in life, even on a par with the youth that is just entering on business, without his incitements to perseverance".¹¹⁶ In Northumberland, the argument was taken to its logical conclusion, that really good labourers were a disadvantage because they were too bigoted. "I am sure that any one who has had anything to do with the introduction of a new implement will bear me out, that we have the greatest difficulty in getting our men to use even common judgement in its use. They hate - with a dreadful hatred - any innovation; and it is only by the most bull-dogged English perseverance that you have any chance of success."¹¹⁷

In practice, the reluctance of labourers to accept innovation had appreciable effects. George Boswell purposely drilled oats far too thick in Dorset in 1789 so as not to annoy his workmen.¹¹⁸ William Mure, on his travels in Berkshire, wrote back to Northumberland of a situation in which a "Scots Plow was going with two, while the country plow on the other side of the hedge had 4 horses with a driver the Plowman however the Scots Plowman [sic] had a driver - he told me that he could not begin the ridge, nor lift the last furrow without a driver - I let him see that it was very easy to do both - but he then said that it was customary for every Plowman to have one, and of course he would not be unlike them."¹¹⁹ When Sir John Delaval sent the implements from London

115 Andrew Grey, *The Plough-Wright's Assistant*, 1808, p.xi.

116 William Lester, *op.cit.*, 1811, pp.205-6.

117 R.M.Weeks, 'On Grubbers, Cultivators and Autumn Cleaning', paper read to Newcastle Farmers' Club, July 1st 1854. L.& P., Bolbec N630.6/3.

118 George Boswell to George Culley, April 6th 1789. NCRO/ZCU/14.

119 William Mure to George Culley, March 31st 1793. NCRO/ZCU/18.

for use on his Northumberland estate, the only criticism came from the labourer who actually used them, one Matthew. "Matthew says they will nether of them answer well for this strong land - they can't get the smaller one to answer at all, he imagines the Beam has been made of Green wood... ¹²⁰. "The double plough was tried on last monday fortnight and altho it takes a great Draught and does not meet with Matthews approbation is nevertheless of great merit."¹²¹

If labourers were to be convinced of the benefit of new systems, they learnt best from their equals. Reapers in Berwickshire about 1790 would not accept that the scythe-hook was a superior instrument to their customary sickle when given them by farmers, but were keen to use them when reapers from other areas, armed with scythe-hooks, were introduced.¹²² There is no doubt that labourers were used as carriers of innovation. When George Culley was giving advice to John Welch, the manager of his Denton estate, he wrote, "... you will want someone who understands, drilling or ridging for Turnips. Now I don't know that this Hills can ridge, but I think it is very probable he can as he belonged this Country... It will save us sending a young fellow from this Country"¹²³ Abundant evidence exists of men with practical agricultural skills learned in one area being purposely introduced to another that their skills might be spread. The Earl of Findlater introduced Northumberland over-seers to his Banff estate after 1753,¹²⁴ and one Charles Duff, "a first-rate labourer who has had great experience in wire fencing" had travelled from Northumberland to fence in Perthshire in 1852.¹²⁵ Advertisements commonly appeared in the Courant for experienced farm labourers. Ploughmen were wanted for Jamaica,¹²⁶ a hind "well acquainted with the modern Improvements

120 John Bryers to Sir John Delaval, Feb.14th 1783.NCRO/2DE/4/20/35.

121 Joseph Oxley to Sir John Delaval, Feb.22nd 1783.NCRO/2DE/4/15/13. See also Matthew's management of a pea drill in John Bryers to Sir John Delaval, April 4th 1783. NCRO/2DE/4/20/42.

122 Berwickshire Quarterly Report, F.M.,23, 1822, pp.235-6.

123 George Culley to John Welch, Nov.1798. NCRO/ZCU/6.

124 F.M.,7, 1806, pp.1-4.

125 Letter to Mr.Burnett from his brother-in-law.NCRO/ZHE/34/9.

126 N.C., Nov.3rd 1821.

in Agriculture, particularly those practiced in Northumberland" was needed in Berkshire,¹²⁷ two more were needed to go into Herefordshire¹²⁸ and three "who can plough well, and are acquainted with the Drill Management" were wanted "to go into the South".¹²⁹ Occasionally, advertisements were inserted for men with very specific skills, such as the one for "a Man who has been accustomed to Mow with the Caledonian or Aberdeen Corn Scythe".¹³⁰ George Culley was constantly pestered by correspondents from all over the country wishing to be sent skilled Northumberland labourers, usually just for a year or so until their techniques had been learned by local workers. "If it happens that you know of a sturdy good Ploughman unmarried, & who has been accustomed to work oxen... ",¹³¹ "if any steady young Man who has merely been accustomed to go with Draughts etc is willing to come to this Country..."¹³² "Lord K wishes much to have a good Plowman from you - and one that will be steady and not led foolishly away by the men of the Country".¹³³

Culley himself had used the same method in reverse. When anxious to introduce the Dorset system of water meadows to Northumberland in 1787, Culley had approached Bakewell for advice and he had suggested a man be sent north for six or seven years.¹³⁴ But George Boswell, in Dorset, was critical of this method and wrote that such a man, "by his self consequence, and acquired importance... might withhold much useful instruction. The method I shall submit to you is; to fix upon an healthy, robust Man, who has been used to labour... it is absolutely necessary

127 N.C., Sept. 8th 1804.

128 N.C., April 4th 1812.

129 N.C., March 5th 1808.

130 N.C., Sept. 5th 1845.

131 Marton Dalrymple to George Culley, Hamilton, Oct. 16th 1806. NCRO/ZCU/28.

132 George Laing to George Culley, Longhoughton, April 19th 1803. NCRO/ZCU/25.

133 William Mure to George Culley, Ipswich, March 31st 1793. NCRO/ZCU/18

134 Robert Bakewell to George Culley, Feb. 8th 1787. N.U.L./Basement/Misc.Mss./7.

for him to be a Labourer and to be both willing and able to go through the manual part of the work in all weather, as the Watermen do here".¹³⁵

If this was an important way in which agricultural ideas were spread, then its significance in Northumberland with its highly mobile agricultural labour force is likely to have been great (see pp. The Reverend Gilly reckoned that of 174 hind families in one locality in the north of Northumberland in 1841, 51 (29%) had 'flitted' the previous year, 83 (48%) during the preceding two years, 145 (83%) within the previous seven, and 156 (90%) within ten years.¹³⁶ The Northumberland hind was contracted to work by the year, and was supplied with a cottage by his employer. Consequently he was unencumbered by the ties of property and was free to move where he chose.¹³⁷ While some of this movement was provoked by a natural desire for higher wages,¹³⁸ much of it became traditional. "They are migratory, and obstinate to maintain their rights; and will spend twenty shillings in moving miles away to a new place, for a difference of ten shillings in the year's wages."¹³⁹ In the South of the County, where labourers hired by the day or the week were more common, there was also much movement, though occasioned by the superiority of industrial over agricultural wages.¹⁴⁰ Hence a situation existed in Northumberland whereby the rapid diffusion of agricultural information at grass roots level was all but inevitable. Apparently the best, if not the only, way of securing reliable and detailed information about Bakewell's breeding methods had been either to bribe or hire his labourers.¹⁴¹ This sort of tactic had never been necessary

135 George Boswell to George Culley, March 25th 1787. NCRO/ZCU/12.

136 Rev. Dr. Gilly's address to Highland and Agricultural Show at Berwick. N.C., Oct. 8th 1841.

137 See Stuart Macdonald, 'The Northumberland Village Labourer', Bulletin of the Northumberland Local History Society, 22, 1972.

138 "The hinds and every description of Labourers are upon the wing and standing out for an augmentation of their Wages." John Carr to Sir John Delaval, Feb. 4th 1793. NCRO/2DE/4/57/13.

139 Walter White. Northumberland and the Border, 1859, p. 202.

140 The Duke of Northumberland's Commissioners referred to "this district round Newcastle, where the peasantry more frequently change, than upon the Northern Estate...". D.W. Smith, William Smith and D. Laws to Duke, June 20th 1807. AC/Z/1/12b/223.

141 George Culley to Matthew Culley, Dishley, Nov. 1784. NCRO/ZCU/9.

in Northumberland: agricultural information was always readily available at the level at which it had to be applied and from a source by which adoption was likely to proceed.

It is felt that the contact between working farmers was also an important means by which agricultural ideas were communicated. The obvious objection to this thesis is the argument that the experiences of neighbouring farmers would have been so similar and the farmers themselves so isolated from foreign influences, that new ideas were likely to have been rare. This was perhaps so. Map D2 shows the number and destination of all journeys made by George Hughes, a substantial tenant farmer at Middleton Hall, Ilderton, between July 1789 and October 1800. Distant journeys were obviously rare. and, with the exception of one agricultural tour of Scotland, Hughes' main field of experience was his native Glendale. Smaller farmers were probably even more restricted in their outlook. The great majority of Durham farmers apparently hardly ever read a book or travelled beyond their market town and consequently could have received little benefit from model farms, agricultural literature or societies.¹⁴² Peel determined the greatest barrier to the diffusion of agricultural information to be the "general unwillingness on the part of ordinary farmers to travel beyond the bounds of their own parish".¹⁴³ Even informed opinion of the generality of farmers was that they were "the worst and most inefficiently educated" group in the country.¹⁴⁴ "The farmer is not so much within reach of information as the merchant and manufacturer; he has not, like those who reside in towns, the means of ready intercourse, and constant communication, with others engaged in the same occupation. He lives retires; his acquaintance is limited, and but little valued;

142 'A Farmer's Son', N.C., Feb.4th 1848.

143 Sir Robert Peel to James Caird in James Caird, *English Agriculture*, in 1850-51, 1852, p.viii.

144 Mr. Weeks to Newcastle Farmers' Club, Jan.2nd 1847. L.& P., Bolbec N630.6/1



The Travels of George Hughes, Tenant of Middleton Hall,
July 1789 - October 1800.

Source: NCRO/ZSI/46.

and, unless in the habit of reading, he is little likely to acquire any other knowledge of his own art than what is traditional, what is transmitted from father to son, and limited, in its application, to his own immediate neighbourhood."¹⁴⁵ Walter White mused on the life of the tenant at West Keilder in 1859. "What does the tenant think about in such a place? Are his sheep sufficient to keep him from mental stagnation?"¹⁴⁶ Perhaps the opinion held by one farmer of his own breed tells most about the enlightenment of the typical farmer. "I never converse with farmers without a fever; I would as soon argue with a methodist, and deem a horse in a mill a superior character."¹⁴⁷

Community feeling and neighbourhood influence were no doubt strong in rural areas. The Hexham Farmers' Club arose from normal communion among farmers at Hexham market,¹⁴⁸ the County petition against increased horse tax originated at Wooler market,¹⁴⁹ and racing at Milfield attracted so many farmers that it was thought worthwhile to postpone a stock sale at Bamburgh¹⁵⁰ and to let Glendale farms during race week when there would be plenty of bidders and high offers.¹⁵¹ Map D3, derived from Tithe File information of c.1840, shows how strong was local market influence even at this late date. Even Morpeth Market, one of the largest for stock in the country, was visited most regularly only by those in very close proximity. Given then that there was close contact among farmers at a neighbourhood level, it is still necessary to establish how

145 From Rigby's translation of Chateaufieux, *The Agriculture of Italy*, in J.R. M'Culloch, *Statistical Account of the British Empire*, 1837, 1, p.546.

146 Walter White, *op.cit.*, 1859, p.357.

147 W. Belcher, *A.A.*, 4, 1785, p.37.

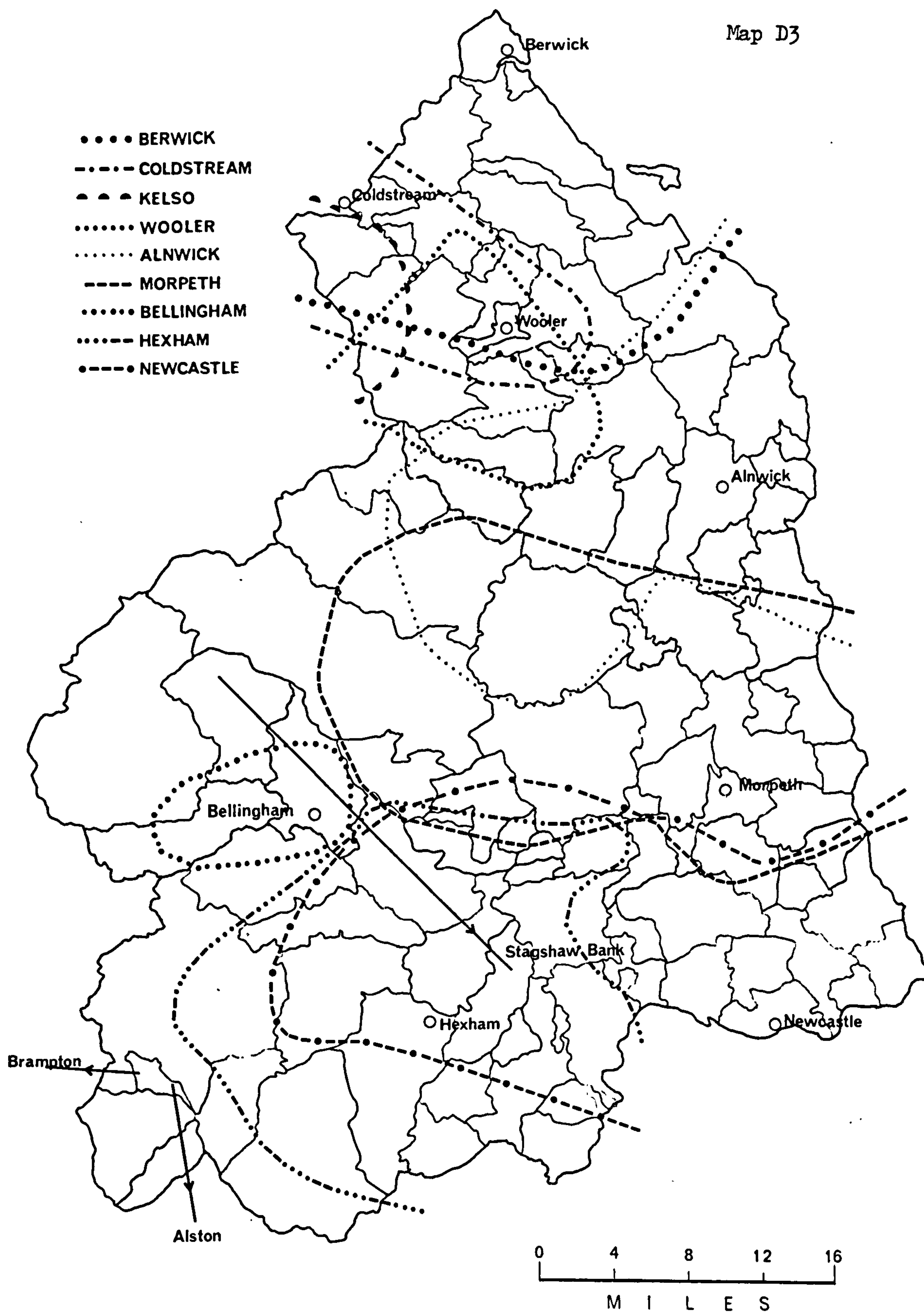
148 *N.C.*, Jan.2nd 1846.

149 John Bailey to Earl of Tankerville, Dec.26th 1797. NCRO/Tankerville Box 1/D/3 unsorted.

150 *N.C.*, May 4th 1776.

151 Joseph Oxley to Sir John Delaval, May 30th 1784. NCRO/2DE/4/16/14.

Map D3



Market Catchment Areas c.1840.

Source: Tithe Files, c.1840.
PRO(A)/IR/18.

effectively foreign ideas reached individual members of the group.

One important way in which the individual could increase his personal agricultural experience was the agricultural tour. It may be that "Information depended upon the channel of oral report of some adventurous spirit, who had travelled beyond the beaten tracks of the market town",¹⁵² but it would be a mistake to assume this to have been a rare occurrence. The Grand Tour of the nobility was no more established practice than the agricultural tours of those farmers rich enough to afford them.¹⁵³ Such excursions were extremely popular among some Northumberland farmers.¹⁵⁴ George Culley had embarked upon tours "in his young days, when it was difficult to attain to a knowledge of the practice of agriculture in any district beyond that in which the agriculturist resided".¹⁵⁵ A more dedicated observer than the young Culley it would be hard to imagine. In Derbyshire, he felt forced to remind himself that "I came not so much to feast the Imagination as to inform the Understanding, Especially in Every Branch of Agriculture so far as I am Able and I don't think this is the Country for this purpose...".¹⁵⁶ Twenty years later, he had to buy a cart in Wentbridge to take home all the animals and implements he had been given.¹⁵⁷ Culley became familiar with the agriculture of most areas of Britain and listed those regions he had not visited as "Shropshire, Sussex, Devonshire, Cornwall, and a great part of Wales".¹⁵⁸ But Culley was not singular in his experiences. He often referred to his neighbours being away from home on tour,¹⁵⁹ and George.

152 S. Donkin, *The Agricultural Labourers of Northumberland*, 1869, p.9.

153 See John Bailey, *Agriculture of Durham*, 1810, p.67.

154 "It can hardly be doubted that many men concerned in the management of land in Northumberland, do travel in the course of the year both northwards and southwards." *J.N.A.S.*, June 15th 1850, p.vi.

155 John Grey to Tyneside Agricultural Society. *N.C.*, Oct.4th 1844.

156 George Culley, 'Journal of a Tour into Leics.& South of England', 1765. NCRO/ZCU/1.

157 George Culley to Matthew Culley, Oct.15th 1784. NCRO/ZCU/9.

158 George Culley, *Observations on Livestock*, 1801, pp.vii-viii.

159 See, for example, George Culley to Robert Bakewell, Nov.1st 1791. NCRO/ZCU/31.

Boswell's locality in Dorset was astonished at the number and character of Northumberland farmers passing through. "Pray Sir, What kind of Folks are left behind in the North? Are we to judge by the samples you've sent us? Upon my word and credit we make a very ridiculous appearance, excepting one or two of my acquaintance,... they all stand and look like stuck piggs, with their mouths open."¹⁶⁰

Although it was exceptional for a tenant farmer to manage farms at great distances from each other,¹⁶¹ there were alternative means of maintaining contact with other agricultural areas. Postal communication was not slow. A letter sent from Darlington after the market was over on a Monday in 1802 was expected to reach^{north} Northumberland - well over 100 miles distant - by the Tuesday or the Wednesday at the very latest.¹⁶² The information in such a letter had allowed Culley to profit by 1/- a stone in wool at least once and he reckoned the direct financial advantage of early intelligence worth many times the annual sum of £2.10s his weekly letters from Darlington cost.¹⁶³ George Culley may have been exceptional in the volume of his correspondence on agricultural matters. It would seem that no extensive correspondence of any other practical farmer in the County survives for this period, but a curious incident suggests that extensive correspondence was fairly general. Culley was abetting the hiding in Scotland of a Mr. Hayto, a considerable Lincolnshire farmer, from his creditors. Culley himself could not have hoped to secrete Mr. Hayto or his predicament because "Mr. H. is well known to Mr. Wm. Jobson & others in this neighbourhood, & they in the habit of corresponding with

160 George Boswell to George Culley, July 25th 1793. NCRO/ZCU/30.

161 Joseph Darling of Flodden also ran an Edinburgh farm of 550 acres, but his landlord's agent could not understand how he coped. John Carr to Lord Delaval, Feb. 20th 1807. NCRO/2DE/4/60/40.

162 George Culley to John Welch, April 23rd 1802. NCRO/ZCU/6. A useful survey of the state of the roads in Northumberland exists in M.A. Dodds, *The Turnpike Roads of Northumberland*, M.A. Thesis, Durham University, 1965.

163 George Culley to John Welch, May 13th 1800. NCRO/ZCU/6.

164 See Stuart Macdonald, 'The Role of the Individual in Agricultural Change: The Example of George Culley of Fenton', in *Change in the Countryside*, ed. R.A. Butlin and H.S.A. Fox, Institute of British Geographers Special Publication (forthcoming).

Gentⁿ in the vicinity where he lives".¹⁶⁵ It is perhaps a matter of some surprise that so much of Culley's correspondence was so sternly agricultural. The man, and presumably many of his fellows, seems to have had little time for levity and not to have suffered fools gladly. He outlined his policy in a letter to Welch in 1802. "I often say that we have a deal to learn yet. And every wise humble man will learn every y^r & every day? But a conceited selfwise animal, I will not call him a man, will not nor ever can learn."¹⁶⁶ A letter of 1794 from a man he had last heard from in 1766 declared that "as many agreeable changes in that most valuable Science have happened during so long a Period of time, if it be agreeable to you, I have no Objection to have a little Conversation with you by Letter relative to such Improv'ments as are already made in Agriculture..."¹⁶⁷ Across this letter Culley has scrawled "never answered".

Although the formal education of many farmers may have left much to be desired, it became increasingly common towards the end of the 18th century to send intending farmers to train under a distinguished farmer or in a progressive area.¹⁶⁸ So many apprentice farmers came to study in Glendale that Welford called it "the Mecca of agricultural pilgrimage".¹⁶⁹ Culley himself took in many students,¹⁷⁰ recommended his neighbours to many more,¹⁷¹ and was forced to refuse several.¹⁷² Numerous advertisers in the Courant sought such studentships¹⁷³ or gave them as references.¹⁷⁴

165 George Culley to Mr. Foreman, March 22nd 1800. NCRO/ZCU/31.

166 George Culley to John Welch, Dec.1st 1801.NCRO/ZCU/6.

167 T. Carlisle to George Culley, April 24th 1794. NCRO/ZCU/18.

168 This was said to have been the method of diffusing agricultural knowledge likely to be most efficient and the only way of overcoming farmers not knowing "the mode of management practised, or the more improved implements used in districts 20 or 30 miles from their own home." 'S - r', F.M., 7, 1806, pp.153-6.

169 Richard Welford, op.cit., 1895, 1, p.673.

170 See, for example, George to Matthew, Oct.1784.NCRO/ZCU/9; Joseph Oxley to Sir John Delaval, Dec.14th 1782, NCRO/2DE/4/14/42.

171 See, for example, George Culley to ?, July 13th 1806. NCRO/ZCU/32.

172 See, for example, George Culley to Thomas Wakefield, Aug17th 1796. NCRO/ZCU/21.

173 e.g., N.C., Sept.9th 1809. 174 e.g., N.C., Feb.12th 1780 or April 5th 1806.

Similar advertisements make it clear that farmers from distant regions where superior agriculture was practised were in constant demand.

"Great Encouragement will be given to an experienced Northumberland Farmer, who will introduce the Northumberland Mode of Agriculture."¹⁷⁵

A commentator on the state of agriculture in Cromarty remarked, "A farm, belonging to a Mr. Middleton, originally from Northumberland, struck our attention, as being cultivated in a superior style to what is customary in this part of the world".¹⁷⁶ Not surprisingly, Culley was applied to to recommend tenants; for example in 1800 when a Cleveland landlord wanted "a Tweedside Farmer, who understands this country's method of Cultivation";¹⁷⁷ and in 1808 when Culley's candidate was expected "to set an example to the tenants on Sir George Clerks Estate, who are in general but indifferent tenants".¹⁷⁸

How common stewards or tenants from other areas were is not known. It is generally only when they came considerable distances that record has survived, such as that of the Norfolk man near Aberdeen who had "improved some middling Soil & hedged in a few Closes with Quicks which look pretty in so wild a Country, has got some Norfolk Waggon & Wheele

175 N.C., July 9th 1814. A Shropshire Landlord sought to entice 6 tenants to "introduce the Scotch or Northern Husbandry". N.C., April 22nd 1809.

176 'Sketch of a Tour through the Northern Counties of Scotland', F.M., 2, 1801, p.421. This same Mr. Middleton was said to have erected the first threshing machine in the area and to have exported the first wheat. H.C. Pawson, Cockle Park Farm, 1960, p.16.

177 George Culley to John Welch, June 21st 1800. NCRO/ZCU/6.

178 George Pring to George Culley, Edinburgh, June 14th 1808. NCRO/ZCU/30. The grandfather of John Martin of Haydon Bridge held an extensive farm of the Duke of Argyle in the first half of the 18th century "in order that the tenants of his grace might profit by the example of the English improved mode of husbandry". E. Mackenzie, A Descriptive and Historical Account of the Town and County of Newcastle upon Tyne, 1827, 2, p.578.

Plows... ".¹⁷⁹ It is likely that many more tenants moved more moderate distances, within the County or region, restricted only by amount of rent and of capital needed to stock a farm. Such considerations did not limit the intending steward's or overseer's range.¹⁸⁰ He was able to go wherever his recommendations would impress, and he who could claim knowledge of the techniques of an advanced agricultural region was particularly well qualified. "Wants a Situation, as Land Steward, a young Man who perfectly understands the Northumberland Agriculture, and can have Letters of Recommendation. The Advertiser has no Objection to go to Ireland or to America."¹⁸¹ "A Young Man, who is acquainted with the Agriculture and Management of Stock in Northumberland, is desirous of enjoying himself as a Manager or Assistant in any part of the Kingdom."¹⁸² "Wants a Situation, as a Land or Farming Overseer, a Young Man, who was brought up in the Agricultural Line in Scotland, and has served his Time to one of the first Agriculturists in Northumberland."¹⁸³ Practical experience combined with the initiative needed to move a man to where the prospects were brighter prepared the stage for the diffusion of agricultural innovation:¹⁸⁴ practical examples are needed to see if the method made useful contact with the audience.

George Culley first saw a field of drilled turnips in 1766 when passing the farm of a Mr. Pringle, near Coldstream. He had previously only heard and read of Mr. Tull's method and, though interested, had not been impressed until he had seen it in practice.¹⁸⁵ In fact, Pringle's method was not that of Tull, for he grew turnips on ridges, as a fallow crop and fertilized by dung. Culley mentioned that two other gentlemen were drilling turnips in this region at this time. Philip Howard of

179 Matthew Culley's 'Journal of a Tour into Scotland', 1770.NCRO/ZCU/1

180 See Sir Cuthbert Headlam, The Three Northern Counties of England, 1939, p.129.

181 N.C., Jan.26th 1811

182 N.C., April 22nd 1809.

183 N.C., April 12th 1823.

184 See William Dickinson, op.cit., p.224 and Joseph Lowe, The Present State of England, 1823, Appendix, p.47.

185 George Culley to Arthur Young, c.1791.NCRO/ZCU/3/1. An amended version of this 'History of Drilling Turnips' appears in A.A.,20,1793, pp.162-5.

Corby in Cumberland and William Dawson of Frogden, near Kelso, but that because Pringle was an army surgeon who took his method from Tull's book, and Howard was a squire, no neighbouring farmers had followed their example. "But no sooner did Mr. Dawson (an actual farmer) adopt the same system, than it was immediately followed, not only by several farmers in his vicinity, but by those very farmers adjoining Mr. Pringle, whose crops they had seen for ten or twelve years so much superior to their own,"¹⁸⁶ Dawson, in fact, had learnt his methods in the same way that his neighbours came to, by practical example. He had spent six years as a young man learning farming in the south of England,¹⁸⁷ where he had discovered how to drill turnips, a technique which he pursued in Scotland "with a success that first led his neighbours into the same method, which is now [1793] diffusing in every direction".¹⁸⁸ Culley claimed to have been a friend and regular visitor of Dawson, but it is perhaps more likely that the account of John Grey - neighbour, student and friend of Culley - is also accurate. Grey claimed that Culley "applied for information to Mr. Dawson, and finally sent a young man to that gentleman to put him in the way to cultivate by drill rows",¹⁸⁹ Nor is the example yet exhausted. "When Mr. Dawson at Frogden first introduced the drill-husbandry, he had great difficulty to teach a ploughman to manage two horses without a driver, and to make straight furrows. Mr. James MacDougal... was the first who learned to plough in this manner; and from him the practice spread through this county, and the neighbouring ones of Northumberland, Berwickshire, East-Lothian, and Tweeddale."¹⁹⁰ MacDougal worked as ploughman and overseer to Dawson from 1765 to 1778, instructed the students who came to stay at Frogden, and eventually "took in lease a small farm

186 Bailey and Culley, 1805, p.102; and also R.M. Garnier, History of the English Landed Interest (Modern Period), 1893, p.242.

187 A.A., 20, 1793, p.164.

188 Ibid.

189 John Grey to Hexham Farmers' Club. N.C., Jan. 14th 1848.

190 Robert Douglas, Agriculture of Roxburgh and Selkirk, 1798, p.69.

in the neighbourhood of West Linton, in Peebles-shire, where his example, as a farmer paying rent, and acting at his own risk, had immediate influence, as to the ready introduction and rapid diffusion of the turnip and artificial grass husbandry among practical farmers".¹⁹¹

It is perhaps presumptuous to assume a knowledge of the means by which agricultural ideas were conveyed in the late 18th and early 19th centuries. Many modern studies, particularly those of the sociologists, have tackled the problem as it applies to modern circumstances.¹⁹² One over-riding difficulty has been the surfeit of data available.¹⁹³ In an historical study, the problem is quite the opposite. There is never a sufficiency of data and what there is cannot be assumed to be reliable. It this is the case with even "the landmarks of technological progress that are usually dealt with in histories of invention",¹⁹⁴ it is doubly so in the world of agriculture where the very gradualness of progress often suffered it to go unrecorded.¹⁹⁵ Torsten Hägerstrand, the doyen of geographers working in this field,¹⁹⁶ has affirmed that historical facts do not usually admit of the statistical treatment necessary for an adequate study of innovation.¹⁹⁷ Consequently, if any knowledge is to be gained of the ways in which agricultural information spread in the 18th and 19th centuries, other less scientific, less statistical methods must be used. The value of more modern studies must lie in comparison with their conclusions: their methods of arriving at them are not apposite.

It is thought that the successful communication of agricultural ideas was heavily dependent upon personal contact among those practically involved in agriculture. Several modern studies suggest that the influence of

191 Obituary of James M'Dougal, F.M., 23, 1822, p.512.

192 See bibliography in E.Rogers and F.Shoemaker, *Communication of Innovations*, 1971.

193 Ibid., pp.88 and 346.

194 H.G. Barnett, *The Basis of Cultural Change*, 1953, pp.2-3.

195 John D. Black, 'Factors Conditioning Innovation in Agriculture', *Mechanical Engineering*, 67, March 1945, p.181.

196 E. Rogers and F. Shoemaker estimated that Geography had contributed only 0.6% of publications on diffusion research.Op.cit.,p.70.

197 Torsten Hägerstrand, *The Propagation of Innovation Waves*, 1952, pp.1-2.

progressive neighbours is still, despite reliable alternative sources of information, of considerable, even paramount, importance.¹⁹⁸ It is not possible to compare the influence of modern agricultural institutions and publications with that of their predecessors. It must suffice to conclude that the role of these in the diffusion of agricultural ideas was not great - certainly not as important as was often claimed - and that the same social factors which frequently seem to have prevented landlords playing a more important role were at least partly responsible for the significance of neighbourhood influences in the propagation of better farming techniques. It is not unreasonable to conclude that knowledge of the skills of the most fundamental and practical of arts should have been communicated directly by its very practitioners.

198 See, for example, H.F. Lionberger, *Adoption of New Ideas and Practices*, 1964, especially pp.14-16, 73, 89; H.F.Lionberger and G.M.Goughenour, 'Social Structure and Diffusion of Farm Innovation', *Missouri Agricultural Experiment Station Research Bulletin* 631, April 1957; W.C.Bailey et al., 'Community Structure and Farm Education', *Mississippi Ag.Ex.Station, Sociology and Rural Life Series*, 8, Jan.1957; A.L.Coleman and C.P.Marsh, 'Differential Communication among Farmers in a Kentucky County', *Rural Sociology*, 20, June 1955, pp.93-101, and 'Farmers' Practice - Adoption Rates in Relation to Adoption Rates of Leaders', *Rural Sociology*, 19, Dec.1954, pp.180-1.

E. Conclusion

E

Conclusion

The detailed study of the diffusion of a single and specific innovation, such as the threshing machine or the turnip drill, is satisfying in that it shapes a great deal of diverse historical evidence into a presentable whole. By taxing the historical sources, it is certainly possible to trace the progress of a few innovations in depth and of more in lesser depth, but the vast mass of change has to be suffered to go undetected. Often this is an inevitable consequence of the inadequate nature of the evidence available, but it is also a product of the innovations themselves. The most important innovations - important to the farmers who implemented them rather than to those seeking to follow their progress - were probably the very smallest ones, perhaps a slight adjustment in the shape of the plough mould-board, more reliable seed, changes in the timing and sequence of farming operations or in the efficiency of available labour. Such developments would scarcely have been evident even to farmers at the time and the historian has no hope of detecting them. Consequently, he is thrown back on major innovations and either wittingly or unwittingly makes the assumption that as these prospered so did all innovation.

It has been shown that even major, detectable agricultural changes varied greatly in the way they progressed from initial introduction to substantial adoption. The diffusion of Dishley sheep bore little similarity to that of Shorthorn cattle and less to that of, say, ribbing ploughs. Even the various sorts of drills assumed diffusion patterns specifically related to their individual agricultural properties rather than to their common characteristic of being similar innovations. If even that small proportion of all innovation, major detectable change, reveals no obvious common innovatory characteristic, then it can hardly be

expected that the mass of smaller, more diffuse, more hidden agricultural innovations progressed along common, easily identifiable lines. The examples given of the diffusion of more major innovation would be worthy of study if only to discover something of the progress of important individual agricultural developments, but they have a greater function and in this they represent the bulk of more minor innovation. About innovation theory or innovation as an abstract idea the examples are no more informative than the farmers who first used the new techniques would have been. But they do demonstrate that the main controlling factors in innovation diffusion were often closely related to the factors which originally prompted the innovation. Hence an initial enthusiasm for water meadows was prompted by a need for late winter feed and was quelled by this demand being satisfied by turnips and swedes. The corn drill did not attain widespread adoption while the ribbing method of aligning corn held other advantages of more importance. The examples demonstrate that the initiation and diffusion of an agricultural innovation was much more a function of its agricultural properties than of its characteristics as an innovation.

It has been necessary to investigate many of the agricultural conditions that could reasonably have affected the adoption of such innovations as, for example, threshing machines or Dishley sheep. Rent level, length of lease, landlord policy and many other factors certainly had the power to precipitate and control agricultural innovation and in some cases their effects on specific innovations can be traced. Farmers on short leases were generally unwilling to effect improvements at their own expense the benefits of which they might never reap, while those with more capital on large farms could afford to introduce new techniques that others queried. Some landlords, such as the Duke of Northumberland, were generally unwilling to finance improvements: others, such as the Greenwich Hospital, were only too anxious. Yet it would be overly simplistic to see these factors as predeterminates which had but to occur in the correct

combination for innovation to prosper. The agricultural conditions often embraced innovations in themselves. The changes in the administrative policy of the Greenwich Hospital Estate were themselves an innovation, as were changes in farm lease terms or even, after extensive application of drainage and manures, were changes in soil potential. Hence, even the most marked diffusion of innovation, such as that of the threshing machine, was happening in a changing agricultural world. Innovation is not simply change; it is also often a product of change and its diffusion takes place surrounded by change.

With the advantage of hindsight and experience the 18th century farmer did not have, it is easy to see what should have been done simply by discovering what was eventually successful. It should be remembered that the only practices the 18th century farmer knew to be successful were those he had already adopted and which experience had proved to be advantageous in practice. Established techniques are, after all, no more than tested and proven innovations. Certainly the agricultural innovations of the distant past may appear less complex than more recent change, but it would be surly of the historian to assume that they had been more easily made or had evoked fewer doubts and difficulties. It is churlish to look upon men of past generations as simpletons because their techniques were less sophisticated than our own. Innovations are founded on other innovations; progress upon achievement.

It is also mistaken automatically to equate innovation with progress and improvement. Change is not necessarily always for the better and it is often hard to tell what consequences will arise from any alteration in a system. The appointment of John Grey as Receiver to the Greenwich Hospital Estates was a political reward which eventually improved the agriculture of the Estate and, by example and influence, that of other parts of the County, but this was never the original intention nor could the result have been foreseen. Those who sought to alter the ostensible servitude of the north Northumberland hind and his family in the mid-19th

century unconsciously hit at a vital prop of the prosperous husbandry on which much of the hind's own prosperity was founded. Innovation was not only the product of innovation, but itself encouraged further and often unpredictable change. For this very reason, land owners in the south-west of the County were reluctant to approve even tested improvements lest the immediate change endangered manorial rights and so precipitated less desirable change. A system with obvious imperfections might often be reckoned preferable to a new one with unknown and incalculable disadvantages. The innovators who followed the early doctrinaire shallow drainage system of Smith or the slightly later but equally unyielding policy layed down by Parkes would undoubtedly have profited by either delaying adoption or by making their own innovations on the innovation. Similarly, those who constructed the first costly water meadows must have regretted their rash expenditure. But it was not always the innovators who suffered the risks involved in change. Those who paid a small fortune for the later, much inferior, and often much adulterated guano must have regretted their mistake and perhaps even their delay. Change is not necessarily seen as desirable or beneficial by contemporaries. To the historian it may often seem to equal improvement, but that is only because change for the worse has been eliminated at the expense and discomfiture of contemporaries.

It is most realistic to see typical innovation not as major and discernible change or even as involving many lesser changes, but as failure; not because of any inadequacy in methods of communication or because agricultural conditions were unfavourable, but because the innovations themselves were found wanting. For every agricultural change that came to be general, every innovation even moderately successful, there were hundreds that never got off the ground. The agricultural press of the 18th century was packed with many thousands of ideas for new machines, new rotations, new land use, new agricultural techniques of every kind, ideas that were presumably being put into practice as

innovations in various parts of the country. The vast majority of these, such as the scheme to cover the moors with flax or the plough to be driven by wind, came to nothing. This the historian knows to have happened, but the contemporary could not know. The growth of chicory as a field crop must have deserved the same consideration by innovation leaders as the growth of clover or turnips. Immediate acceptance of an innovation is relatively easy to trace, as was that of the threshing machine for example, and even delayed innovation, such as that of the early 19th century reaping machine not adopted until after mid-century, is sometimes discernible, but the historian is rarely able to examine innovation that failed to diffuse altogether. In a study purely concerned with the diffusion of innovation, investigation of failed innovation would be largely irrelevant. But this study has been constructed on a broader base and though it is still impossible to trace the impact of schemes that are not known to have succeeded, it is nevertheless very relevant to remember that the contemporary had to consider not just the possibility but the probability that any given innovation would be a failure.

It is tempting to attribute to those who early adopted eventually successful innovation the quality of foresight and to the laggards the quality of ignorance. This is an abuse of hindsight. Considering the excellent chance that an innovation would have been either useless or a positive burden, it is surely more reliable to assume that those who were first to adopt were as logically unjustified as those who failed to adopt the innovation after it had been widely recognised as worthwhile. The opinion that innovators and innovation leaders were the wisest and most progressive men in a community was not entirely unanimous among 18th century farmers. Many looked upon innovators as men primarily distinguished by their willingness and ability to take risks. In other words, the innovator was a gambler, a man whose fortune was at least partly staked on risks the rest of the farming neighbourhood deemed it imprudent to take. There are only a few good or lucky gamblers; most

gain nothing and many lose much. Many innovators must have suffered as a consequence of their anxiety to pioneer new ideas. As many innovations were far from successful, so innovators did not always succeed. Even Culley could not promote the diffusion of water meadows among his neighbours, the return to ox draught or encourage the adoption of one-horse carts with the speed he thought the innovation deserved. Not all innovators could have had the fortune and reputation of a Culley and the consequent ability to ride out such reverses. The extent to which failed innovations damaged their innovators must have had considerable effect on the light in which the rest of the community viewed innovation. Perpetual failure does not encourage imitation.

Imitation of agricultural innovation, which is diffusion of that innovation, has been found to have been determined by those conditions that controlled agricultural potential. These included geographic conditions such as altitude and soil quality and also conditions more specifically related to agricultural endeavour, such as estate policy or farm size. But, above all, the success of agricultural innovation was determined by detailed agricultural conditions. Its diffusion was controlled by a vast range of agricultural factors, forbidding in their complexity and specific to each innovation. To seek any combination of such factors common to the diffusion of all agricultural innovation would make diffusion appear a much more simple process than it actually was. The diffusion of agricultural innovation was an intrinsic part of the whole of agricultural development and only when it is studied in its agricultural context does it take on form and substance and become more than a series of superficial, and largely inexplicable patterns, devoid of meaning and distinct from reality. This study has attempted to seek and to explain just some aspects of agricultural innovation in that agricultural context.

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